The Surface Tension of Pure Liquid Compounds

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The surface tension tables presented herein are the result of a literature survey, evaluation, and compilation of data of some 2200 pure liquid compounds, 226 of which were reported for a single temperature. These are arranged with related compounds in the increasing order of their molecular weights. As far as possible the method of measurement, nature of atmosphere to which the liquid was exposed during measurements, and the estimated accuracy are given for each liquid. The tabulated values were calculated from the derived results of directly measured quantities reported in the literature of many countries from about 1874 to 1969. Preliminary plots of the experimentally measured quantities indicated that the surface tensions of the liquid compounds are linear functions of the temperature over the reported operational range. The principle of least squares was applied to experimental surface tension values to establish the regression curves and their equations. The constants of the equations (slope and intercept), together with the standard deviations are given for each compound. The selection factors establishing criteria of quality of surface tension data are discussed. These include (a) method of measurement, (b) purity of compound, (c) quality of apparatus and assembly, (d) experimental procedure (experimentation), (e) reliability of measurements (most probable values), (f) experience of investigator, and (g) availability of data. There are 274 references listed alphabetically.

Key words: Surface tension; liquids: thermodynamics of liquids: evaluated data.

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Comparison of Recommended Values for Surface Tension as a Function of Temperature with Selected Measurements.

1. Introduction

The following tables present, in the opinion of the writer, the best values of the surface tensions presently available for the compounds listed. The compounds which were studied are those which are liquid in the general vicinity of room temperature and below; the cryogenic fluids are also included. The writer has tried his best to be comprehensive in coverage within this range. References run from the 19th century through 1969.

In addition to compiling the data available in the literature the writer has evaluated these data and estimated their reliability. A discussion of the methods used in evaluating the data and determining their reliability is given below.

1.1. Contents of the Tables

The tables have been arranged, as far as possible, with related compounds in the order of their increasing molecular weights. With one exception the tables present values of the surface tension at integral values of the temperature in degrees Celsius. The exception is the final table which contains data for those compounds that have been studied at only one temperature.

The range of temperatures covered in the tables for a given compound reflects the range covered by the set or sets of measurements selected as most reliable. For the large majority of the compounds the dependence of the surface tension (given in dyn/cm)[1] on the temperature can be given as

$$\gamma = a - bt$$

where a and b are constants and t is the temperature in degrees Celsius. The values of a and b obtained by least-squares fitting of the experimental values are given in the tables and can be used to interpolate within the operational range. The numbers, σ_γ, given in the tables are standard deviations of the residuals resulting from the fit and give a measure of the scatter of the experimental measurements about the line. For a few compounds, for which measurements were available over a rather large temperature range, the van der Waals-Guggenheim equation [ref. 82] was applied. In these cases the equation used is included in the table.

An estimate of the reliability of the data is given in each table and will be found in the space above the columns of numbers or in footnotes. Where one investigator reported an extended series of measurements in one table and used the same apparatus and procedures throughout, the same reliability value was assumed to apply to all entries in the table.

Whenever the information is available, the method of measurement is given, together with the nature of the atmosphere to which the liquid was exposed during the measurement. Air is designated as A; nitrogen, N_2; hydrogen, H_2; helium, He; etc. In the case of measurements made within a closed system, the liquid was in equilibrium with its own vapor. This situation is indicated by the letter, V.

1.2. The Figures

For a number of liquids, for which several sets of measurements over a temperature range exist, plots were made comparing the values selected by the writer with those measured experimentally or selected by other workers. These deviation plots are shown in figures 1–56. The 56 liquids represent those liquids for which the most data are available, with the exception of water. A plot was not given for water since the surface tension of water is known with sufficient precision that a plot of the recommended values against the principal measurements, as listed in table 86, would show no deviations on a scale comparable with that of the other figures. Also Gittens [72 aa] has recently made a fine-grained analysis of the data for water and his recommended values differ negligibly from those recommended here.

1.3. Finding a Given Compound and the Index

The presentation of the data involved formidable problems in nomenclature. Since the measurements cited cover a time span of nearly 100 years, many of the names supplied in the original papers had to be changed to make them conform to modern usage and hence make them intelligible to as large a body of readers as possible. An attempt was made to follow the practices of *Chemical*

[1] 1 dyn/cm = 10^{-3} N/m.

Abstracts in the text and in indexing. Trivial names, or names from other systems of nomenclature which are widely used are usually cross referenced in the Index. Further details are provided at the start of the Index.

The compounds are grouped in the tables according to chemical type, and this is reflected in the naming and numbering of the tables. Usually, the proper table for a given compound can be found by looking at the List of Tables. However, compounds for which data are available only at a single temperature are grouped together. Furthermore, an author making systematic measurements on a class of compounds would occasionally include some compounds of another class which provided interesting comparisons because of structural relationships: for example, an author studying esters of a given acid might include measurements on the acid itself. Because the interest provided by the comparisons may still exist for many readers and because the estimate of error tends to remain constant within a given series of this type, such tables were included as they were initially presented. In any event all compounds in the tables can be located in the Index.

1.4. The Selection of the Recommended Data and the Estimation of Reliability

The selection of data to be recommended and the estimation of their reliability involve several factors, the most important of which are (a) amount of data available, (b) method of measurement, (c) purity of compound, (d) quality of apparatus and assembly, (e) experimental procedure, (f) experience of the investigator. The interplay of these factors in the case of each compound or set of measurements will not be described in detail. However, in what follows the principles used by the writer in the selection of the data and the estimation of their reliability will be given.

a. Amount of Data Available

A review of the literature from 1880 to the present time reveals that surface tension measurements for a large number of liquids have been reported but once. Since it was deemed desirable to make the present compilation as comprehensive as possible, these were included regardless of their probable degree of accuracy. It should be clear that there is no direct check on the accuracy of the measurements on these compounds, and that the accuracy is estimated indirectly from the other factors listed above.

b. Methods of Measurement

The surface tension data tabulated in the tables which follow were measured by one or more of the static methods [see ref. 108a]. These methods are concerned with liquid systems whose surfaces are relatively stationary and have existed long enough to permit the contiguous phases to attain a state of equilibrium with them.

The method which is truly static involves the spontaneous rise of a liquid in a capillary tube. It is the simplest and most accurate and can be used over a wide temperature range. The experimental conditions are so clearly defined and the mathematical theory so simple that the accuracy of the measurements is limited largely to the design of the capillarimeter and any procedural errors introduced by the operator.

The capillary-rise apparatus has numerous variants. Many novel designs have appeared in the literature: some, to meet special experimental conditions; others, to obtain precise results with a minimum of liquid; and still others, to circumvent the time-consuming effort involved in the selection and testing of component parts of the capillarimeter. Although the capillary-rise method is accepted as the ultimate standard for the determination of liquid surface-tensions, the fact remains that high precision is obtained only by rigorously conforming to certain structural and dimensional specifications in designing the capillarimeter. Three directly measurable components only are involved in the capillary-rise equation. Thus, the determinate and indeterminate errors are relatively few and, therefore, the accuracy is very high.

For liquids which form an appreciable glass-liquid contact angle, alternative methods, such as the maximum bubble-pressure or drop-weight, are generally used. The experimental procedures for these are somewhat more complex, but in the hands of an experienced and expert operator the results are very reliable.

c. Purity of Compound

One fundamental requisite, probably the most important in determining the accuracy of surface tension data, is the purity of the compounds involved. Although compounds of very high purity are now readily available, this was decidedly not the case even a few years ago, when most investigators had to prepare their own compounds. Therefore, in the evaluation of surface tension data careful attention must be paid to the efforts investigators have made to obtain their compounds in pure form and to document their purity.

Other things being equal, surface tension measurements made in recent years on a given compound are probably more accurate than those reported previously. The probable purity of the compound played an important role in the decision of the writer in selecting a given set of data for the tables. This selection was frequently guided by advice from authorities in chemical preparative methods who reviewed the various reports on the compounds involved.

d. Quality of Apparatus and Assembly

It has been pointed out that a given method for measuring the liquid surface tension may have many variants. These manifest themselves in variations of design of the principal apparatus and in the organization of the various essential parts of the total assembly. The writer has observed that equally experienced operators using different variants of the same technique on the same compound can obtain differing results. In comparing different measurements,

other things being equal, the writer has a preference for the simpler apparatus.

e. Experimental Procedure

The writer attached greater weight to those papers in which the experimenter either gave replicate measurements that allowed a measure of random errors to be derived or derived such a measure himself.

f. Experience of the Investigator

Some investigators conducted extensive series of measurements over a period of years. When this occurred it was usually possible to compare their results in some cases with results of other workers of recognized capability, and thus obtain an estimate of their reliability. When discrepancies occurred the writer gave greater weight to the results of an investigator with a proven record of reliability.

g. Estimation of Reliability

The factors listed above were not only used in selection from among competing data sets but also in determining the reliability of a given data set. In addition the writer utilized the following sources in estimating reliability: reliability estimates made by the author of the compiled values which appear in the *International Critical Tables*, estimates made by the investigator in reporting his measurements, calculations of the magnitude of random errors, and estimates based on comparisons with data of known reliability.

2. Acknowledgments

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3. Tables of Surface Tensions

TABLE 1. Acetals [242]

(Capillary Rise Method-A)

Compound	Surface tension (±0.10)									Least squares constants		σ_y
	15°	20°	30°	40°	50°	60°	70°	80°	90 °C	a	b	
Dimethoxymethane	21.79	21.19	19.99	------	------	------	------	------	------	23.59	0.1199	±0.06
Diethoxymethane	21.93	20.29	20.00	18.71	17.41	16.12	------	------	------	23.87	0.1291	±0.21
Dipropoxymethane	23.74	23.26	22.31	21.36	20.40	19.45	18.50	17.55	16.59	25.17	0.0953	±0.05
Dibutoxymethane	25.00	24.57	23.69	22.81	21.93	21.06	20.18	19.30	18.43	26.32	0.0877	±0.06
Diisobutoxymethane	------	22.63	21.76	20.89	20.01	19.14	18.27	17.40	16.53	24.37	0.0871	±0.04
Dipentyloxymethane	26.43	25.97	25.03	24.10	23.17	22.24	21.31	20.37	19.44	27.83	0.0932	±0.04
Dihexyloxymethane	27.44	27.02	26.17	25.33	24.48	23.63	22.79	21.94	21.10	28.71	0.0846	±0.04
Diisopropoxymethane	------	20.97	20.08	19.20	18.32	17.44	16.56	15.67	14.79	22.73	0.0882	±0.04
1,1-Dimethoxyethane	22.16	21.58	20.42	19.26	18.10	16.95	------	------	------	23.90	0.1159	±0.02
1,1-Diethoxyethane	21.91	21.40	20.37	19.34	18.31	17.28	16.25	15.22	14.19	23.46	0.1030	±0.10
1,1-Dipropoxyethane	23.57	23.09	22.11	21.14	20.17	19.20	18.23	17.25	16.28	25.03	0.0972	±0.09
1,1-Dibutoxyethane	24.90	24.44	23.51	22.59	21.67	20.75	19.83	18.90	17.98	26.28	0.0922	±0.06
1,1-Diisobutoxyethane	22.85	22.40	21.52	20.63	19.74	18.85	17.97	17.08	16.19	24.18	0.08877	±0.02

TABLE 2.1. Acetylenes [80]

(Maximum Bubble Pressure-A)

Compound	Surface tension (±0.15)				Least squares constants	
	20°	40°	60°	85 °C	*a*	*b*
1-Hexyne	20.98	-------	-------	-------	-------	-------
1-Heptyne	22.68	20.59	18.51	-------	24.76	0.1042
1-Octyne	23.86	21.78	19.70	-------	25.94	0.1040
1-Nonyne	25.01	23.03	21.05	18.58	26.99	0.09893
1-Decyne	25.93	24.01	22.08	19.67	27.86	0.09637
1-Undecyne	26.59	24.71	22.82	20.47	28.47	0.094124
1-Dodecyne	27.27	25.36	23.44	21.05	29.19	0.09581
1-Tridecyne	27.56	25.68	23.80	21.46	29.44	0.09395
3-Cyclohexylpropyne	29.81	27.85	25.90	23.46	31.76	0.09764

TABLE 2.2. Diesters of 2-butyne-1,4-diol [80]

(Maximum Bubble Pressure-A)

Ester	Surface tension (±0.15)				Least squares constants	
	20°	40°	60°	85 °C	*a*	*b*
Formate	-------	45.64	42.75	39.15	51.42	0.1444
Acetate	-------	38.20	35.77	32.72	43.08	0.1219
Propionate	36.16	34.07	31.98	29.37	38.25	0.1045
Butyrate	33.15	31.41	29.69	27.51	34.88	0.0867
Valerate	32.03	30.41	28.79	26.76	33.65	0.08107
Hexanoate	31.50	29.86	28.21	26.16	33.14	0.0821
Heptanoate	31.23	29.79	28.34	26.53	32.68	0.0724

TABLE 2.3. 2-Propyn-1-ol and its esters [80]

(Maximum Bubble Pressure-A)

Ester	Surface tension (±0.15)				Least squares constants	
	20°	40°	60°	85 °C	*a*	*b*
Formate	35.00	32.17	29.34	-------	37.83	0.1415
Acetate	32.82	30.20	27.57	-------	35.45	0.1313
Propionate	31.25	28.85	26.44	23.44	33.65	0.1201
Butyrate	30.04	27.84	25.65	22.90	32.24	0.1099
Valerate	29.80	27.70	25.60	22.97	31.90	0.1050
Hexanoate	29.46	27.50	25.53	23.07	31.43	0.09837
Heptanoate	29.68	27.78	25.89	23.52	31.58	0.09488
2-Propyn-1-ol	36.05	33.50	30.97	-------	38.59	0.1270

TABLE 3. Acetylenic esters [115]

(Differential Capillary Rise-A)

Compound	Surface tension (±0.1)									Least squares constants		σ_γ
	15°	20°	30°	40°	50°	60°	70°	80°	90 °C	a	b	
Methyl 3-butynoate	33.57	32.94	31.68	30.42	29.16	27.90	26.64	25.38	24.12	35.46	0.1260	±0.07
Ethyl 3-butynoate	31.00	30.43	29.28	28.13	26.97	25.82	24.67	23.52	22.37	32.73	0.1151	±0.07
Propyl 3-butynoate	30.43	29.88	28.78	27.69	26.59	25.49	24.40	23.30	22.21	32.07	0.1096	±0.07
Butyl 3-butynoate	------	29.42	28.41	27.41	26.40	25.40	24.39	23.39	22.38	21.43	0.1005	±0.06
Methyl 9-decynoate	33.61	33.10	32.06	31.02	29.98	28.95	27.91	26.87	25.84	35.17	0.1037	±0.03
Ethyl 9-decynoate	32.48	31.97	30.94	29.91	28.88	27.86	26.83	25.80	24.78	34.02	0.1027	±0.08
Propyl 9-decynoate	------	31.74	30.78	29.83	28.87	27.92	26.96	26.01	25.05	33.65	0.0955	±0.03
Ethyl undecanoate[a,b]	28.78	28.34	27.44	26.54	25.64	24.75	23.85	22.95	22.06	30.13	0.0897	±0.07
Dimethyl acetylenedicarboxylate	38.52	37.91	36.70	35.48	34.27	33.06	31.84	30.63	29.41	40.34	0.1214	±0.09
Diethyl acetylenedicarboxylate	33.82	33.31	32.27	31.24	30.21	29.18	28.15	27.11	26.08	35.37	0.1032	±0.06
Dipropyl acetylenedicarboxylate	------	32.18	31.23	30.27	29.31	28.35	27.39	26.44	25.48	34.10	0.0958	±0.10
Diisopropyl acetylenedicarboxylate	------	30.67	29.75	28.82	27.89	26.96	26.03	25.11	24.18	32.53	0.0928	±0.08
Dibutyl acetylenedicarboxylate	32.17	31.72	30.82	29.92	29.02	28.12	27.22	26.32	25.42	33.52	0.0900	±0.05
Dipentyl acetylenedicarboxylate	31.84	31.42	30.58	29.73	28.89	28.05	27.20	26.36	25.51	33.11	0.0844	±0.10
Diisopentyl acetylenedicarboxylate	------	30.68	29.84	28.99	28.15	27.31	26.46	25.62	24.77	32.37	0.0844	±0.02
Propyl phenylpropiolate	37.58	37.07	36.05	35.04	34.02	33.01	31.99	30.98	29.96	39.10	0.1015	±0.08
Butyl phenylpropiolate	------	36.21	35.29	34.36	33.43	32.50	31.57	30.65	29.72	38.07	0.0928	±0.04
Isobutyl phenylpropiolate[b]	35.50	35.05	34.14	33.22	32.31	31.40	30.49	29.58	28.67	36.87	0.09116	±0.01

[a] Not acetylenic.

[b] Ref. [255] (Cap. Rise-A) (±0.3).

TABLE 4. Tertiary alcohols [162, 173]

(Maximum Bubble Pressure Method-A)

Compound	Surface tension (±0.1)					Least squares constants	
	25°	35°	45°	55°	65 °C	a	b
3-Methyl-3-hexanol	24.44	23.53	22.62	21.73	20.80	26.72	0.0910
3-Ethyl-3-hexanol	25.55	24.66	23.77	22.88	21.99	27.77	0.0880
4-Methyl-4-heptanol	24.68	23.70	22.73	21.75	20.78	27.12	0.0976
4-Ethyl-4-heptanol	25.22	24.41	23.61	22.80	22.00	27.24	0.08075
4-Propyl-4-heptanol	25.05	24.25	23.45	22.65	21.85	27.05	0.0800
2-Methyl-2-hexanol	23.74	22.86	21.87	21.09	20.20	25.96	0.0886
3-Ethyl-3-pentanol	25.25	24.36	23.47	22.57	21.68	27.49	0.0894
2-Methyl-2-octanol	25.41	24.56	23.72	22.89	22.03	27.52	0.08455
3-Methyl-3-nonanol	26.12	25.27	24.41	23.55	22.69	28.27	0.08585
4-Methyl-4-decanol	26.05	25.22	24.38	23.55	22.72	28.14	0.08345
5-Methyl-5-undecanol	26.13	25.32	24.50	23.69	22.87	28.17	0.0815
6-Methyl-6-dodecanol	26.07	25.46	24.84	24.22	23.60	27.62	0.0618
tert-Butyl alcohol	19.96	19.06	18.16	17.26	16.36	22.21	0.0900
3-Methyl-3-heptanol	25.21	24.27	23.34	22.40	.....	27.54	0.09339
4-Methyl-4-octanol	25.61	24.63	23.64	22.66	.....	28.07	0.09841
5-Methyl-5-nonanol	26.20	25.21	24.23	23.24	.....	28.66	0.09854
2-Methyl-2-heptanol	24.76	23.81	22.86	21.91	.....	27.14	0.0951
3-Methyl-3-octanol	26.05	25.12	24.18	23.24	.....	28.40	0.09382
4-Methyl-4-nonanol	25.72	24.87	24.02	23.17	.....	27.84	0.08483
5-Ethyl-5-decanol	26.58	25.70	24.81	23.94	.....	28.79	0.08836
5-Propyl-5-decanol	26.28	25.45	24.62	23.79	.....	28.35	0.0829
5-Butyl-5-decanol	26.84	25.95	25.05	24.16	.....	29.08	0.08954

TABLE 5.1. Aldehydes

Compound	Surface tension										Least squares constants		σ_γ
	10°	20°	30°	40°	50°	60°	70°	80°	90°	100 °C	a	b	
Acetaldehyde[a]	22.54	21.18	19.82	18.46	17.10	.....	.....	.....	.....	.....	23.90	0.1360	±0.08
Paraldehyde[b]	27.22	26.16	25.09	24.03	22.97	21.91	20.85	19.78	18.72	17.60	28.28	0.1062	.....
Butyraldehyde[c]	25.74	24.82	23.89	22.97	22.04	21.12	20.19	.....	.....	.....	26.67	0.0925	.....
Valeraldehyde[c]	26.95	25.94	24.93	23.92	22.91	21.90	20.89	.....	.....	.....	27.96	0.1010	.....
Isovaleraldehyde[d]	24.70	23.69	22.67	21.66	20.65	19.64	18.63	17.61	16.60	.....	25.71	0.1012	.....
Heptanal[c]	27.72	26.84	25.84	24.96	24.08	23.19	22.20	.....	.....	.....	28.64	0.0920	.....
Benzaldehyde[b]	39.63	38.54	37.45	36.36	35.7	34.18	33.09	32.00	30.91	29.82	40.72	0.1090	.....
Cumaldehyde[d]	34.91	34.03	33.14	32.26	31.37	30.48	29.60	28.71	27.83	26.94	35.80	0.08861	.....
Salicylaldehyde[f]	.....	42.90	41.65	40.41	39.17	37.93	36.69	35.44	34.20	32.96	45.38	0.1242	±0.06
2-Furaldehyde[d]	45.08	43.76	42.39	41.10	39.78	38.45	37.12	35.79	34.47	33.14	46.11	0.1327	.....
Trichloroacetaldehyde[g]	26.46	25.27	24.07	22.87	21.67	20.48	19.28	18.08	.....	.....	27.66	0.1197	.....

[a] Ref. [142] (Capillary Rise Method-A).
[b] Ref. [134] (Drop Weight-A) (±0.50).
[c] Ref. [126] (Maximum Bubble Pressure-A) (±0.10).
[d] Ref. [192] (Capillary Rise Method-A) (±0.70).
[e] Ref. [87] (Drop Weight-A) (±0.30).
[f] Ref. [27] (Maximum Bubble Pressure-A) (±0.20).
[g] Ref. [177] (Capillary Rise Method-A) (±0.10).
[h] Ref. [193] (Capillary Rise Method-A) (±0.4).

TABLE 5.2. Aldehydes (higher melting)

Compound	Surface tension											Least squares constants		σ_γ
	60°	70°	80°	90°	100°	110°	120°	140°	160°	180°	200 °C	a	b	
m-Hydroxybenzaldehyde[a]						41.96	41.10	39.36	37.62	35.89	34.15	51.51	0.08679	±0.24
p-Hydroxybenzaldehyde[a]	48.09	47.34	46.59	45.84	45.09	44.34	43.59	42.08				52.59	0.07504	±0.25
4-Hydroxy-3-methoxybenzaldehyde[b]			41.08	39.85	38.62	37.39	36.16	33.70	31.23	28.77	26.31	50.93	0.1231	

[a] Ref. [27] (Max. Bubble Pressure-A) (±0.20).
[b] Ref. [200] (Max. Bubble Pressure-A) (±0.20).

TABLE 6. Aliphatic haloesters

(Capillary Rise-A)

Compound	Surface tension									Least squares constants		σ_γ
	10°	20°	30°	40°	50°	60°	70°	80°	90 °C	a	b	
Methyl chloroacetate[a]	36.60	35.29	33.99	32.68	31.38	30.08	28.77	27.47	26.16	37.90	0.1304	±0.14
Methyl dichloroacetate[b]	35.78	34.56	33.34	32.12	30.90	29.69	28.47	27.25	26.03	37.00	0.1219	±0.03
Methyl trichloroacetate[b]	34.32	33.13	31.95	30.76	29.58	28.40	27.21	26.03	24.84	35.50	0.1184	±0.05
Ethyl chloroacetate[a]	33.00	31.83	30.65	29.47	28.29	27.12	25.94	24.76	23.59	34.18	0.1177	±0.08
Ethyl dichloroacetate[b]	33.73	32.57	31.42	30.26	29.10	27.94	26.78	25.63	24.47	34.89	0.1158	±0.12
Ethyl trichloroacetate[b]	31.90	30.82	29.75	28.68	27.60	26.53	25.46	24.39	23.31	32.97	0.1073	±0.10
Ethyl chloroformate[c]	27.80	26.70	25.70	24.60	23.50	22.40	21.30	20.20	19.10	28.90	0.1084	±0.09
Propyl chloroacetate[a]	31.83	30.74	29.66	28.58	27.49	26.41	25.33	24.25	23.16	32.91	0.1083	±0.10
Propyl dichloroacetate[b]	31.81	30.74	29.67	28.60	27.52	26.45	25.38	24.31	23.24	32.88	0.1071	±0.07
Propyl trichloroacetate[b]	31.50	30.43	29.37	28.31	27.24	26.18	25.12	24.06	22.99	32.56	0.1063	±0.08
Propyl bromoacetate[a]	33.02	31.96	30.91	29.85	28.79	27.73	26.67	25.62	24.56	34.08	0.1058	±0.09
Propyl iodoacetate[a]	35.51	34.44	33.37	32.30	31.23	30.17	29.10	28.03	26.96	36.58	0.1069	±0.17
Butyl chloroacetate[a]	31.20	30.22	29.23	28.25	27.26	26.28	25.29	24.31	23.32	32.19	0.0985	±0.07
Butyl dichloroacetate[b]	31.48	30.49	29.49	28.50	27.50	26.50	25.51	24.51	23.52	32.48	0.0996	±0.09
Butyl trichloroacetate[b]	31.14	30.18	29.21	28.25	27.29	26.33	25.37	24.40	23.44	32.10	0.0962	±0.09
Butyl bromoacetate[a]	32.86	31.87	30.88	29.89	28.90	27.91	26.92	25.93	24.94	33.85	0.0990	±0.05
Butyl iodoacetate[a]	34.05	33.09	32.14	31.18	30.23	29.28	28.32	27.37	26.41	35.00	0.054	±0.14
3-Methylbutyl trichloroacetate[d]	29.49	28.56	27.63	26.69	25.76	24.83	23.90	22.97	22.04	30.42	0.09313	±0.12
Ethyl 2-bromopropionate[e]	31.43	30.36	29.29	28.23	27.16	26.10	25.03	23.97	22.90	32.49	0.1065	±0.04
levo-2-Pentyl 2-bromobutyrate[e]	29.25	28.35	27.45	26.55	25.65	24.75	23.85	22.95	22.05	30.15	0.09003	±0.02

[a] Ref. [244] (±0.10).
[b] Ref. [250] (±0.10).
[c] Ref. [108] (Maximum Bubble Pressure-N_2) (±2.0).
[d] Ref. [132] (Drop Weight-A) (±0.2).
[e] Ref. [256] (±0.3).

TABLE 7.1. Acetic anhydride [225]

(Capillary Rise Method-A)

Surface tension (±0.20)											Least squares constants	
−20°	−10°	10°	20°	30°	40°	50°	60°	80°	100°	110 °C	a	b
38.39	36.96	34.08	32.65	31.21	29.78	28.34	26.90	24.03	21.16	19.72	35.52	0.1436

TABLE 7.2. Aliphatic acids [246]

(Capillary Rise Method-A)

Acid	Surface tension (±0.10)									Least squares constants		σ_γ
	15°	20°	30°	40°	50°	60°	70°	80°	90 °C	a	b	
Formic[a]	38.22	37.67	36.58	35.48	34.38	33.28	32.18	31.09	29.99	39.87	0.1098	±0.54
Acetic	-------	27.59	26.60	25.60	24.61	23.62	22.62	21.63	20.63	29.58	0.0994	±0.09
Propionic	27.19	26.69	25.70	24.71	23.71	22.72	21.73	20.74	19.74	28.68	0.0993	±0.05
Butyric	-------	26.51	25.59	24.67	23.75	22.83	21.91	20.99	20.07	28.35	0.0920	±0.02
Isobutyric	25.50	25.04	24.12	23.20	22.28	21.36	20.44	19.52	18.60	26.88	0.0920	±0.10
Valeric	-------	27.13	26.24	25.35	24.46	23.58	22.69	21.80	20.92	28.90	0.0887	±0.08
Isovaleric	-------	25.51	24.62	23.74	22.85	21.96	21.08	20.19	19.31	27.28	0.0886	±0.07
Myristic[b]	-------	-------	-------	-------	-------	28.30	27.50	26.50	25.50	33.90	0.0932	±0.01
Levulinic[c]	-------	-------	-------	38.64	37.87	37.11	36.35	35.59	34.82	41.69	0.0763	±0.03
4-Methylvaleric[d]	27.00	26.60	25.81	25.02	24.23	23.45	22.66	21.87	21.08	28.18	0.0789	±0.07
Heptanoic[e]	28.61	28.18	27.34	26.49	25.64	24.79	23.94	-------	-------	29.88	0.0848	±0.04

[a] Ref. [125] (±0.5).
[b] Ref. [79] (Ring Pull) (±0.10).
[c] Ref. [108] (Maximum Bubble Pressure-N_2) (±2.0).
[d] Ref. [177] (±1.0).
[e] Ref. [86] (Drop Weight) (±0.2).

TABLE 8. Aliphatic alcohols [246]

(Capillary Rise Method-A)

Alcohol	Surface tension (±0.10)										Least squares constants		σ_γ
	10°	20°	30°	40°	50°	60°	70°	80°	90°	100 °C	a	b	
Methyl	23.28	22.50	21.73	20.96	20.18	19.41	------	------	------	------	24.00	0.0773	±0.02
Ethyl	23.22	22.39	21.55	20.72	19.89	19.06	18.23	------	------	------	24.05	0.0832	±0.06
Propyl	24.48	23.71	22.93	22.15	21.37	20.60	19.82	19.04	18.27	------	25.26	0.0777	±0.03
Isopropyl	22.11	21.32	20.53	19.74	18.95	18.17	17.38	16.59	------	------	22.90	0.0789	±0.14
Butyl	26.28	25.39	24.50	23.61	22.71	21.82	20.93	20.04	19.14	18.20	27.18	0.08983	±0.04
Isobutyl	23.73	22.94	22.14	21.35	20.55	19.76	18.96	18.17	17.32	16.58	24.53	0.0795	±0.05
Pentanol	26.67	25.79	24.92	24.04	23.17	22.30	21.42	20.55	19.67	18.80	27.54	0.0874	±0.02
3-Methyl-1-butanol	24.94	24.12	23.30	22.48	21.66	20.84	20.02	19.20	18.38	17.56	25.76	0.0820	±0.04
2-Pentanol[a]	24.96	23.95	22.95	21.94	20.94	19.94	18.93	17.93	16.92	15.92	25.96	0.1004	±0.02
2-Methyl-2-butanol[b]	23.43	22.68	21.94	21.19	20.44	19.69	18.94	18.20	17.45	------	24.18	0.0748	------
Allyl	26.63	25.73	24.82	23.92	23.02	22.12	21.22	20.31	19.41	------	27.53	0.0902	±0.02
2-Methoxyethanol	32.32	31.33	30.35	29.36	28.38	27.40	26.41	25.43	24.44	23.46	33.30	0.0984	±0.01
2-Ethoxyethanol	------	28.80	27.90	27.00	26.10	25.21	24.31	23.41	22.52	21.62	30.59	0.0897	±0.12
2-Butoxyethanol	27.86	26.55	25.73	24.92	24.10	23.28	22.47	21.65	20.84	20.02	28.18	0.0816	±0.13
1-Octanol[c]	28.30	27.50	26.70	25.91	25.11	24.32	23.52	------	------	------	29.09	0.0795	±0.04
2-Octanol[c]	27.14	26.32	25.50	24.68	23.86	23.04	22.22	------	------	------	27.96	0.08197	±0.04
1-Nonanol[d]	29.03	28.27	27.51	26.75	26.00	25.24	24.48	23.72	22.96	22.20	29.79	0.07589	±0.16
1-Decanol[c]	29.61	28.88	28.14	27.41	26.68	25.95	25.21	24.48	23.75	23.02	30.34	0.07324	±0.04
Myricyl alcohol[e]	------	------	------	------	------	------	------	27.09	26.39	25.69	32.72	0.07033	±0.06

[a] Ref. [224] (±0.10).
[b] Ref. [193] (±0.4).
[c] Ref. [87] (Drop Weight-A) (±0.2).
[d] Ref. [48] (±0.2).
[e] Ref. [191].

TABLE 9. Aliphatic and related carboxylic esters [243]

(Differential Capillary Rise-A)

Compound	Surface tension (±0.10)										Least squares constants		σ_γ
	10°	20°	30°	40°	50°	60°	70°	80°	90°	100 °C	a	b	
Methyl myristate[a]	.....	29.40	28.60	27.80	27.00	26.20	25.40	24.60	23.80	23.00	31.00	0.0800	±0.15
Methyl palmitate[a]	.....	29.95	29.17	28.40	27.62	26.85	26.07	25.30	24.52	23.75	31.50	0.0775	±0.15
Ethyl palmitate[b]	.....	.....	30.28	29.42	28.56	27.71	26.85	25.99	25.13	24.27	32.86	0.0859	±0.14
Methyl stearate[a]	.....	30.65	29.87	29.10	28.32	27.55	26.77	26.00	25.22	24.45	32.20	0.0775	±0.15
Methyl acetate	26.66	25.87	24.08	22.79	21.50	20.22	.....	.....	.....	.....	27.95	0.1289	±0.08
Ethyl acetate[c]	25.13	23.97	22.81	21.65	20.48	19.32	18.16	17.00	15.84	14.68	26.29	0.1161	±0.10
Propyl acetate	25.48	24.36	23.24	22.12	21.00	19.88	18.76	17.64	16.52	15.40	26.60	0.1120	±0.05
Isopropyl acetate	23.37	22.30	21.22	20.05	19.08	18.01	16.94	15.86	.....	.....	24.44	0.1072	±0.05
Butyl acetate	26.48	25.41	24.35	23.28	22.21	21.14	20.07	19.01	17.94	16.87	27.55	0.1068	±0.08
Isobutyl acetate	24.07	23.56	22.55	21.54	20.52	19.51	18.50	17.49	16.47	15.46	25.59	0.1013	±0.03
sec-Butyl acetate	24.67	23.61	22.56	21.50	20.45	19.40	18.34	17.29	16.23	15.18	25.72	0.1054	±0.07
tert-Butyl acetate	23.59	22.49	21.38	20.28	19.18	18.08	16.98	15.87	.....	.....	24.69	0.1102	±0.01
Isobutyl ricinoleate[d]	32.31	31.54	30.77	29.99	29.22	28.45	27.68	26.91	26.14	25.37	33.08	0.07714	±0.01
1-Pentyl acetate	26.67	25.16	24.68	23.68	22.69	21.69	20.70	19.71	18.71	17.72	27.66	0.09943	±0.05
3-Methylbutyl acetate	25.76	24.77	23.78	22.79	21.80	20.82	19.83	18.84	17.85	16.86	26.75	0.0989	±0.06
Hexyl acetate	27.47	26.50	25.53	24.56	23.59	22.62	21.65	20.68	19.71	18.74	28.44	0.0970	±0.07
Methyl formate[e]	26.72	25.15	23.57	22.00	20.43	18.86	17.29	15.71	14.14	12.57	28.29	0.1572	±0.20
Ethyl formate	24.50	23.84	22.52	21.21	.....	.....	.....	.....	.....	.....	26.47	0.1315	±0.08
Propyl formate	25.65	24.53	23.41	22.29	21.17	20.06	18.94	.....	.....	.....	26.77	0.1119	±0.06
Isopropyl formate	22.84	22.27	21.12	19.97	18.82	.....	.....	.....	.....	.....	24.56	0.1147	±0.02
Butyl formate	26.05	25.03	24.00	22.98	21.95	20.92	19.90	18.87	17.85	16.82	27.08	0.1026	±0.02
Isobutyl formate	24.46	23.90	22.77	21.65	20.53	19.41	18.29	17.16	.....	.....	26.14	0.1122	±0.05
1-Pentyl formate	27.07	26.04	25.02	24.00	22.97	21.95	20.93	19.91	18.88	17.86	28.09	0.1023	±0.03
Isopentyl formate	25.70	24.89	23.87	22.85	21.83	20.82	19.80	18.78	17.77	16.75	26.92	0.1017	±0.04
Hexyl formate	27.82	26.85	25.89	24.92	23.96	23.00	22.03	21.07	20.10	19.14	28.78	0.0964	±0.07
Methyl propionate	26.32	25.06	23.81	22.55	21.29	20.03	18.77	.....	.....	.....	27.58	0.1258	±0.06
Ethyl propionate	25.55	24.38	23.22	22.05	20.88	19.71	18.54	17.38	.....	.....	26.72	0.1168	±0.05
Propyl propionate	25.80	24.74	23.68	22.62	21.56	20.51	19.45	18.39	17.33	16.27	26.86	0.1059	±0.04
Butyl propionate	26.38	25.36	24.39	23.40	22.40	21.41	20.42	19.43	18.43	17.44	27.37	0.0993	±0.06
Methyl butyrate	26.33	25.19	24.04	22.90	21.75	20.61	19.46	18.32	17.17	16.03	27.18	0.1115	±0.06
Methyl isobutyrate	24.86	23.73	22.60	21.47	20.33	19.20	18.07	16.94	15.81	14.68	25.99	0.1131	±0.02
Ethyl butyrate	25.50	24.46	23.41	22.37	21.32	20.28	19.23	18.19	17.14	16.10	26.55	0.1045	±0.03
Propyl butyrate	26.06	25.06	24.06	23.06	22.06	21.06	20.06	19.06	18.06	16.06	27.06	0.1000	±0.04
Butyl butyrate	26.68	25.72	24.75	23.79	22.82	21.86	20.89	19.93	18.96	18.00	27.65	0.0965	+0.06
Isobutyl butyrate[f]	23.63	22.78	21.94	21.10	20.25	19.41	18.57	17.63	16.88	16.04	24.47	0.0843	±0.03
1-Pentyl butyrate	27.02	26.11	25.20	24.29	23.38	22.48	21.57	20.66	19.75	18.84	27.93	0.0909	±0.08
Isopentyl butyrate	26.40	25.48	24.57	23.65	22.73	21.81	20.89	19.98	19.06	18.14	27.32	0.0918	±0.04
Ethyl isobutyrate	24.28	23.24	22.19	21.15	20.10	19.05	18.01	16.96	15.92	14.87	25.33	0.1046	±0.07
Propyl isobutyrate	24.83	23.80	22.78	21.77	20.75	19.74	18.72	17.71	16.69	15.68	25.83	0.1015	±0.09
Butyl isobutyrate	25.47	24.49	23.50	22.51	21.52	20.54	19.55	18.56	17.58	16.59	26.46	0.0987	±0.04
Methyl valerate	26.81	25.76	24.72	23.67	22.63	21.59	20.54	19.50	18.45	17.41	27.85	0.1044	±0.01
Methyl isovalerate	25.28	24.24	23.20	22.16	21.12	20.08	19.09	18.00	16.96	15.92	26.32	0.1040	±0.04
Ethyl valerate	26.19	25.15	24.14	23.15	22.15	21.16	20.16	19.16	18.16	17.16	27.15	0.0999	±0.02
Ethyl isovalerate	24.78	23.78	22.77	21.77	20.76	19.75	18.75	17.74	16.74	15.73	25.79	0.1006	±0.10
Propyl valerate	26.76	25.77	24.79	23.80	22.82	21.84	20.85	19.87	18.88	17.90	27.74	0.0984	±0.05
Propyl isovalerate	25.48	24.53	23.75	22.62	21.67	20.72	19.77	18.81	17.86	16.91	26.43	0.0952	±0.08
Butyl valerate	27.22	26.22	25.22	24.22	23.21	22.21	21.21	20.21	19.21	18.21	28.22	0.1001	±0.07
Butyl isovalerate	26.11	25.16	24.22	23.27	22.33	21.39	20.44	19.50	18.55	17.61	27.05	0.0944	±0.13
Isobutyl valerate[g]	24.24	23.40	22.57	21.73	20.90	20.07	19.23	18.40	17.56	16.73	25.07	0.0834	±0.05
Methyl hexanoate	27.42	26.38	25.33	24.29	23.24	22.20	21.15	20.11	19.06	18.02	28.47	0.1045	±0.10
Ethyl hexanoate	26.77	25.81	24.83	23.89	22.93	21.97	21.01	20.05	19.09	18.13	27.73	0.0960	±0.03
Methyl heptanoate	27.96	26.98	25.99	25.00	24.01	23.03	22.04	21.05	20.07	19.08	28.95	0.0987	±0.08
Ethyl heptanoate	27.38	26.44	25.50	24.56	23.62	22.69	21.75	20.89	19.87	18.93	28.32	0.0939	±0.03
Methyl octanoate	28.93	27.93	26.92	25.92	24.92	23.92	22.92	21.91	20.91	19.91	29.93	0.1002	±0.08
Ethyl octanoate	28.41	27.44	26.47	25.49	24.52	23.55	22.58	21.61	20.64	19.66	29.38	0.09716	±0.16
Methyl decanoate	29.42	28.51	27.59	26.68	25.77	24.86	23.95	23.03	22.12	21.21	30.33	0.0912	±0.04
Ethyl decanoate	29.07	28.15	27.23	26.31	25.38	24.46	23.54	22.62	21.70	20.78	29.99	0.0921	±0.06

TABLE 9. Aliphatic and related carboxylic esters [243]—Continued

Compound	Surface tension (±0.10)										Least squares constants		σ_γ
	10°	20°	30°	40°	50°	60°	70°	80°	90°	100 °C	a	b	
Propyl decanoate	29.16	28.29	27.41	26.54	25.66	24.78	23.91	23.03	22.16	21.28	30.04	0.0876	±0.10
Butyl decanoate	29.41	28.53	27.66	26.78	25.90	25.02	24.14	23.27	22.39	21.51	30.29	0.0878	±0.04
Methyl dodecanoate	30.40	29.50	28.69	27.80	26.91	26.01	25.12	24.23	23.34	22.44	31.37	0.08927	±0.04
Ethyl dodecanoate	29.19	28.32	27.46	26.60	25.74	24.87	24.01	23.15	22.28	21.42	30.05	0.08628	±0.05
Propyl dodecanoate	29.65	28.81	27.97	27.13	26.29	25.45	24.61	23.77	22.93	22.09	30.49	0.0840	±0.10
Butyl dodecanoate	30.02	29.15	28.27	27.40	26.52	25.64	24.77	23.89	23.02	22.14	30.90	0.0876	±0.11
Ethyl lactate [f]	------	28.75	27.77	26.79	25.80	24.82	23.84	22.86	21.87	20.89	30.72	0.0983	±0.04
1-Pentyl stearate [f]	------	------	28.35	27.61	26.87	26.13	25.39	24.65	23.91	23.16	30.57	0.07395	±0.11
Methyl acetoacetate [i]	34.04	33.09	32.15	31.20	30.26	29.32	28.37	27.43	26.48	25.54	34.98	0.0944	±0.17
Ethyl acetoacetate [i]	33.40	32.39	31.37	30.36	29.34	28.33	27.31	26.30	25.28	24.27	34.42	0.1015	±0.08
Ethyl 2-acetylvalerate [i]	30.78	29.86	28.93	28.00	27.08	26.15	25.22	24.29	23.37	22.44	31.71	0.09269	±0.38
Ethyl 2-allylaceto-acetate [i]	31.24	30.30	29.36	28.41	27.47	26.53	25.59	24.65	23.71	22.77	32.18	0.09413	±0.03
Ethyl 2,2-dimethyl-acetoacetate [i]	------	------	28.55	27.48	26.41	25.34	------	------	------	------	31.75	0.1068	±0.40
Ethyl 2-ethylaceto-acetate [h]	------	------	28.90	27.94	26.98	26.02	25.06	24.10	23.14	22.18	31.78	0.09598	±0.06
Ethyl 2,2-diethyl-acetoacetate [i]	------	------	27.23	26.29	25.36	24.43	------	------	------	------	30.03	0.0934	±0.40
Methyl levulinate [k]	------	------	31.45	30.38	29.31	28.25	27.18	26.11	25.05	23.98	34.65	0.1067	±0.15
Ethyl 2-isopentylaceto-acetate [k]	------	------	27.28	26.43	25.59	24.75	23.91	23.07	22.23	21.38	29.80	0.08415	±0.10
Methyl 2-methylaceto-acetate [i]	36.82	36.03	34.88	33.73	32.57	31.42	30.27	29.12	27.97	26.82	38.33	0.1151	±0.90
Triethyl aconitate [d]	35.57	34.56	33.54	32.52	31.50	30.49	29.47	28.45	27.44	26.42	36.59	0.1017	±0.03
Isobutyl propionate [l]	27.80	26.64	25.47	24.31	23.14	21.97	20.81	19.64	18.48	17.31	28.97	0.1166	------
Isobutyl isobutyrate [l]	29.65	28.38	27.11	25.84	24.57	23.30	22.03	20.76	19.49	18.22	30.92	0.1270	------
Isopentyl propionate [l]	26.01	25.10	24.20	23.29	22.39	21.49	20.58	19.68	18.77	17.87	26.91	0.09039	------

[a] Ref. [159] (Capillary Pressure-A) (±0.1).
[b] Ref. [49] (Maximum Bubble Pressure-A) (±0.2).
[c] Ref. [125] (V) (±0.3).
[d] Ref. [254] (A) (±0.3).
[e] Ref. [214, 82] (Calc. $\gamma = 0.03849 - (487.1 - T)^{1.25}$).
[f] Ref. [95] (A) (±0.3).
[g] Ref. [132] (Drop Weight-A) (±0.3).
[h] Ref. [216] (Maximum Bubble Pressure-A) (±0.4).
[i] Ref. [108] (Maximum Bubble Pressure-N_2) (±2.0).
[j] Ref. [133] (Drop Weight-A) (±0.4).
[k] Ref. [262] (A) (±0.4).
[l] Ref. [193] (Cap. Rise-A) (±0.6).

TABLE 10. Aliphatic thiols and sulfides [248]

(Cap. Rise-A)

Compound	Surface tension (±0.1)									Least squares constants		σ_2
	15°	20°	30°	40°	50°	60°	70°	80°	90 °C	a	b	
Methanethiol[a]	25.55	24.70	23.00	21.31						28.09	0.1696	±0.02
Ethanethiol	23.87	23.47	22.68							25.06	0.0793	±0.10
1-Propanethiol	25.47	24.84	23.56	22.29	21.02	19.75				27.38	0.1272	±0.05
2-Propanethiol	22.50	21.91	20.74	19.56	18.39					24.26	0.1174	±0.00
1-Butanethiol	26.36	25.79	24.64	23.50	22.36	21.22	20.08	18.93		28.07	0.1142	±0.04
2-Methyl-1-propanethiol	24.52	24.01	22.99	21.96	20.94	19.92	18.89	17.87		26.06	0.1024	±0.16
2-Methyl-2-propanethiol	21.05	20.51	19.43	18.34	17.26					22.68	0.1084	±0.00
1-Pentanethiol	26.83	26.35	25.37	24.39	23.41	22.44	21.46	20.84	19.51	28.30	0.0977	±0.03
3-Methyl-1-butanethiol	26.10	25.60	24.60	23.60	22.60	21.60	20.60	19.60	18.60	27.60	0.1000	±0.21
1-Hexanethiol	27.98	27.50	26.53	25.56	24.59	23.63	22.66	21.69	20.73	29.43	0.0967	±0.03
1-Heptanethiol	27.69	27.26	26.42	25.57	24.72	23.87	23.02	22.18	21.33	28.96	0.0848	±0.25
1-Octanethiol	28.18	27.77	26.95	26.14	25.32	24.51	23.69	22.88	22.06	29.40	0.0815	±0.03
Benzenethiol	39.61	39.01	37.80	36.60	35.40	34.20	33.00	31.79	30.59	41.41	0.1202	±0.09
Methyl phenyl sulfide	40.95	40.33	39.10	37.86	36.62	35.38	34.14	32.91	31.67	42.81	0.1238	±0.03
Ethyl phenyl sulfide	37.60	37.04	35.91	34.78	33.64	32.51	31.38	30.25	29.12	39.50	0.1131	±0.12
Phenyl propyl sulfide	35.89	35.37	34.32	33.28	32.23	31.18	30.14	29.09	28.05	37.46	0.1046	±0.08
Isopropyl phenyl sulfide	33.99	33.46	32.40	31.35	30.29	29.24	28.18	27.13	26.07	35.57	0.1055	±0.09
Butyl phenyl sulfide	34.99	34.50	33.52	32.55	31.57	30.59	29.62	28.64	27.67	36.45	0.0976	±0.07
1-Pentyl phenyl sulfide	34.63	34.16	33.26	32.25	31.30	30.35	29.40	28.44	27.49	36.06	0.0952	±0.13
Hexyl phenyl sulfide	44.67	44.07	42.87	41.68	40.48	39.28	38.09	36.89	35.70	46.46	0.1196	±0.05

[a] Ref. [13] (Capillary Rise Method) (±1.5).

TABLE II. Alicyclic hydrocarbons and derivatives [236]

(Differential Capillary Rise-A)

Compound	Surface tension (±0.1)											Least squares constants		σ_Y
	5°	10°	20°	30°	40°	50°	60°	70°	80°	90°	100 °C	a	b	
Cyclohexane[a]	27.13	26.43	25.24	24.06	22.87	21.68	20.49	19.30				27.62	0.1138	±0.01
Cyclohexene[a]	28.62	28.01	26.78	25.56	24.34	23.11	21.89	20.67				29.23	0.1223	±0.01
Cyclopentane[a]	24.80	23.34	22.61	21.14	19.68	18.22						25.53	0.1462	±0.01
Cyclopentene[a]	25.19	24.44	22.95	21.45								25.94	0.1495	±0.01
Cyclo-octane[f]			29.84	28.75	27.66	26.57	25.48	24.39	23.30	22.21	21.12	32.02	0.1090	±0.05
Cyclopentanol[a]			33.02	32.01	31.00	29.98	28.97	27.96	26.95	25.94	24.93	35.04	0.1011	±0.01
Cyclohexanol[a]			33.40	32.43	31.47	30.50	29.53	28.57	27.60	26.64	25.67	35.33	0.0966	±0.01
Cycloheptanol	35.16	34.70	33.17	32.25	31.33	30.40	29.48	28.56	27.64	26.71	25.79	35.02	0.0923	±0.18
Cyclopentanone	35.00	34.45	33.35	32.25	31.15	30.05	28.95	27.85	26.75	25.65	24.55	35.55	0.1100	±0.05
Cyclohexanone	37.05	36.43	35.19	33.94	32.70	31.46	30.22	28.98	27.73	26.49	25.25	37.67	0.1242	±0.25
Cycloheptanone	36.23	35.71	34.66	33.61	32.56	31.50	30.45	29.40	28.35	27.30	26.25	36.76	0.1051	±0.11
Methylcyclopentane		23.47	22.30	21.11	19.98	18.81	17.65					24.63	0.1163	±0.12
1-Methylcyclopentene[b]	21.20	20.64	19.52									21.76	0.1120	±0.05
Methylcyclohexane[c]	25.54	24.98	23.85	22.72	21.59	20.46	19.33					26.11	0.1130	±0.02
Ethylcyclopentane[c]	25.41	24.90	23.88	22.86	21.84	20.82	19.80					25.92	0.1020	±0.01
Propylcyclopentane[b]	26.42	25.83	24.95	23.97	22.99	22.01	21.03					26.91	0.09795	±0.01
Isopropylcyclopentane[b]	25.85	25.36	24.38	23.40	22.42	21.44	20.46					26.34	0.09795	±0.01
Butylcyclopentane[b]	27.31	26.83	25.87	24.91	23.95	22.99	22.03					27.79	0.0960	±0.01
Isobutylcyclopentane[b]	26.13	25.67	24.75	23.84	22.91	21.99	21.08					26.59	0.0919	±0.01
Propylcyclohexane[b]	27.86	27.35	26.33	25.31	24.29	23.27	22.25					28.37	0.1020	±0.02
Isopropylcyclohexane[b]	27.98	27.48	26.48	25.50	24.49	23.50	22.51					28.48	0.0995	±0.08
Butylcyclohexane[b]	28.48	27.99	27.03	26.02	25.09	24.11	23.14					28.96	0.09697	±0.02
Isobutylcyclohexane[b]	27.39	26.80	25.84	24.87	23.91	22.94	21.98					27.77	0.0965	±0.01
sec-Butylcyclohexane[b]	28.88	28.41	27.46	26.52	25.56	24.61	23.66					29.36	0.0950	±0.01
tert-Butylcyclohexane[b]	28.10	27.62	26.66	25.71	24.74	23.78	22.82					28.58	0.09598	±0.01
Cyclo-octanone[f]					34.03	33.02	32.02	31.02	30.02	29.01	28.01	38.04	0.1003	±0.01
1-Methylcyclohexene[c]		27.70	26.60	25.49	24.38	23.27	22.17	21.06	19.95	18.85	17.74	28.81	0.1107	±0.09
Methylenecyclopentane		25.42	24.35	23.29	22.23							26.48	0.1063	±0.01
3-Methylcyclopentene	24.48	23.88	22.68	21.48								25.08	0.1200	±0.01
1,1-Dimethylcyclohexane[a]	25.59	25.11	24.13	23.16	22.18	21.21	20.24					26.08	0.0974	±0.05
cis-1,2-Dimethylcyclohexane[a]	27.31	26.79	25.73	24.68	23.62	22.56	21.50					27.85	0.1058	±0.02
trans-1,2-Dimethylcyclohexane[a]	25.45	24.98	24.04	23.10	22.16	21.21	20.27					25.92	0.0941	±0.05
cis-1,3-Dimethylcyclohexane[a]	24.56	24.08	22.63	22.15	21.19	20.23	19.27					25.04	0.0962	±0.02
trans-1,3-Dimethylcyclohexane[a]	26.20	25.69	24.67	23.66	22.64	21.62	20.60					26.71	0.1018	±0.01
cis-1,4-Dimethylcyclohexane[a]	25.87	25.39	24.43	23.47	22.51	21.54	20.58					26.35	0.0961	±0.02
trans-1,4-Dimethylcyclohexane[a]	24.47	23.98	23.01	22.03	21.06	20.08	19.10					24.96	0.0976	±0.02
trans-Hexahydro-2-indanone	36.43	35.96	35.03	34.10	33.17	32.24	31.32	30.39	29.46	28.53	27.60	36.89	0.0929	±0.08
trans-Decahydro-2-methylenenaphthalene			30.84	29.91	28.99	28.07	27.15	26.23	25.30	24.40	23.46	32.68	0.0922	±0.03
trans-Hexahydro-2-methylenindan			28.85	27.93	27.02	26.10	25.18	24.27	23.35	22.44	21.52	30.68	0.0916	±0.05

1,1-Dimethylcyclopentane[a]	23.27	22.76	21.75	20.73	19.72	18.70	17.68					23.78	0.1016	±0.02
2-Methylcyclohexanone[c]	33.55	33.03	32.01	30.98	29.95	28.92	27.90	26.87	25.48	24.82	23.79	34.06	0.1027	±0.03
3-Methylcyclohexanone[c]	32.60	32.13	31.21	30.28	29.36	28.43	27.51	26.58	25.66	24.73	23.81	33.06	0.0925	±0.16
4-Methylcyclohexanone[c]	32.36	31.89	30.96	30.02	29.09	28.15	27.22	26.28	25.35	24.41	23.48	32.83	0.0935	±0.02
3-Methylcyclopentanone	31.18	30.69	29.72	28.75	27.78	26.81	25.85	24.88	23.91	22.94	21.97	31.66	0.0969	±0.03
Bromocycloheptane		35.30	34.42	33.53	32.64	31.75	30.87	29.98	29.09	28.21	27.32	36.19	0.0887	±0.20
1-Methylcyclopentanol[b]			29.75	28.76	27.77	26.77	25.44	24.74	24.04	23.34	22.64	31.75	0.0993	+0.04
3-Methylcyclopentanol	29.29	28.94	28.24	27.54	26.84	26.14	25.44	24.74	24.04	23.34	22.64	29.64	0.0700	+0.01
2-Methylcyclohexanol	32.06	31.68	30.91	30.14	29.37	28.60	27.83	27.06	26.29	25.52	24.75	32.45	0.0770	±0.23
3-Methylcyclohexanol	28.77	28.45	27.82	27.19	26.56	25.93	25.31	24.68	24.05	23.42	22.79	29.08	0.0629	±0.01
4-Methylcyclohexanol	28.72	28.38	27.69	27.00	26.31	25.62	24.93	24.24	23.55	22.86	22.17	29.07	0.0690	±0.09
Decylcyclopentane[d]	30.67	30.22	29.34	28.45	27.57	26.68	25.80	24.91	24.02	23.14	22.25	31.11	0.08862	±0.01
Decylcyclohexane[d]	31.06	30.63	29.77	28.92	28.06	27.20	26.34	25.49	24.63	23.77	22.91	31.49	0.08579	±0.01
Methylenecyclohexane		26.76	25.69	24.61	23.53	22.45	21.38					27.84	0.1077	±0.02
1-Methyl-3-methylenecyclohexane		25.68	24.70	23.73	22.75	21.77	20.79					26.66	0.0978	±0.01
1-Methyl-4-methylenecyclohexane	26.20	25.70	24.72	23.73	22.75	21.76	20.78	19.79	18.81	17.82		26.69	0.0985	±0.01
2-Cyclopentylcyclopentanol		38.11	36.18	35.25	34.32	33.39	32.47	31.54	30.61	29.68	28.75	38.04	0.0929	±0.04
Ethylcyclohexane[a]	27.25	26.73	25.67	24.62	23.56	22.51	21.46					27.78	0.1054	±0.04
trans-Octahydro-2(1H)-naphthalenone	37.52	37.05	36.12	35.18	34.25	33.31	32.37	31.44	30.50	29.57	28.53	37.99	0.0936	±0.07
Methyl 2-methyl-1, 1-cyclohexanediacetate			33.68	34.70	33.72	32.73	31.75	30.77	29.79	28.81	27.83	37.62	0.0981	±0.03
Ethyl 2-methyl-1, 1-cyclohexanediacetate			33.26	32.37	31.48	30.58	29.69	28.80	27.91	27.02	26.13	35.04	0.0891	±0.01
Methylcyclopentadecane[f]			32.03	31.19	30.35	29.51	28.67	27.83	26.99	26.15	25.31	33.71	0.0840	±0.09
3-Methylcyclopentadecanone[f]			34.59	33.72	32.84	31.97	31.10	30.22	29.35	28.47	27.60	36.34	0.0874	±0.03
9-Cycloheptadecen-1-one[f]							32.83	31.94	31.05	30.17	29.28	38.15	0.08871	±0.05
1,1,3-Trimethylcyclohexane[b]	24.87	24.41	23.50	22.58	21.67	20.75	19.84					25.38	0.0915	±0.01

[a] Ref. [105] (Maximum Bubble Pressure-A).
[b] Ref. [226] (A) (±0.10).
[c] Ref. [33] (A) (±0.10).
[d] Ref. [112] (N_2) (±0.01).
[e] Ref. [27] (A).
[f] Ref. [187] (A).
[g] Ref. [1] (A).
[h] Ref. [182] (Maximum Bubble Pressure-A) (±0.03).

TABLE 12. Alkyl halides [237]

(Diff. Cap. Rise-A)

Compound	Surface tension (±0.10)										Least squares constants		σ_r
	10°	20°	30°	40°	50°	60°	70°	80°	90°	100 °C	a	b	
Chloromethane[a]	17.6	16.2	14.6								19.5	0.1650	
Iodomethane	32.85	31.00	29.72	28.48							33.42	0.1234	
Bromoethane	25.36	24.20	23.00								26.52	0.1159	±0.02
Iodoethane	30.38	29.10	27.81	26.53	25.24	23.95	22.67				31.67	0.1286	±0.13
1-Chloropropane	23.16	21.92	20.67	19.43							24.41	0.1246	±0.07
2-Chloropropane	20.49	19.60	18.72	17.84							21.37	0.0883	±0.05
1-Bromopropane[b]	27.08	25.86	24.65	23.43	22.21	20.99					28.30	0.1218	±0.60
2-Bromopropane[b]	25.03	23.84	22.66	21.48	20.29						26.21	0.1183	±0.50
1-Iodopropane[b]	30.50	29.37	28.23	27.10	25.96	24.82	23.69	22.55	21.42	20.28	31.61	0.1136	±0.60
2-Iodopropane[b]	28.24	27.14	26.03	24.92	23.81	22.71	21.60	20.49			29.35	0.1107	±0.50
1-Chlorobutane	24.85	23.74	22.62	21.50	20.38	19.27	18.15				25.97	0.1117	±0.08
1-Chloro-2-methylpropane	23.30	22.20	21.10	20.00	18.90	17.81					24.40	0.1099	±0.07
2-Chlorobutane	23.28	22.16	21.05	19.93	18.81	17.69					24.40	0.1118	±0.06
1-Bromobutane	27.58	26.46	25.33	24.21	23.08	21.95	20.83	19.70	18.58	17.45	28.71	0.1126	±0.05
1-Bromo-2-methylpropane	25.90	24.84	23.78	22.72	21.66	20.61	19.55	18.49			26.96	0.1059	±0.03
2-Bromobutane	26.37	25.27	24.16	23.05	21.94	20.84	19.73	18.62	17.52		27.48	0.1107	±0.03
1-Iodobutane	29.79	28.76	27.73	26.70	25.66	24.63	23.60	22.57	21.54	20.51	30.82	0.1031	±0.07
1-Iodo-2-methylpropane	29.19	28.12	27.04	25.97	24.90	23.83	22.76	21.68	20.61	19.54	30.26	0.1072	±0.10
2-Iodobutane	29.26	28.21	27.15	26.10	25.04	23.99	22.93	21.87	20.82	19.76	30.32	0.1056	±0.08
1-Fluoropentane[c]	21.49	20.18	18.86	17.55	16.23	14.92					22.61	0.1315	±0.15
1-Chloropentane	26.01	24.94	23.86	22.79	21.71	20.63	19.56	18.48	17.41	16.33	27.09	0.1076	±0.08
1-Chloro-3-methylbutane	24.43	23.36	22.28	21.21	20.13	19.05	17.98	16.90	15.83		25.52	0.1076	±0.02
1-Bromopentane	28.46	27.41	26.36	25.31	24.26	23.22	22.17	21.12	20.07	19.02	29.51	0.1049	±0.02
1-Bromo-3-methylbutane[b]	27.10	26.11	25.11	24.12	23.12	22.12	21.13	20.13	19.14	18.14	28.10	0.09959	±0.06
1-Iodopentane	30.40	29.58	28.37	27.35	26.34	25.33	24.31	23.30	22.28	21.27	31.41	0.1014	±0.04
1-Iodo-3-methylbutane	29.46	28.54	27.63	26.71	25.80	24.88	23.97	23.05	22.14	21.22	30.37	0.09145	±0.03
1-Fluorohexane[c]	22.41	21.41	20.41	19.41	18.40	17.40	16.40				23.41	0.1001	±0.05
1-Chlorohexane	27.28	26.24	25.21	24.17	23.13	22.09	21.05	20.02	18.98	17.94	28.32	0.1038	±0.06
1-Bromohexane		27.88	26.91	25.94	24.98	24.01	23.04	22.07	21.11	20.14	29.81	0.09669	±0.10
1-Iodohexane[c]		29.94	29.09	28.25	27.40	26.56	25.71	24.87	24.02	23.18	31.68	0.08454	±0.01
1-Fluoroheptane[c]	23.85	22.82	21.80	20.77	19.74	18.71	17.69	16.66	15.63	14.60	24.88	0.1028	±0.04
1-Chloroheptane	27.98	27.02	26.06	25.10	24.13	23.17	22.21	21.25	20.29	19.33	28.94	0.0961	±0.05
1-Bromoheptane	29.76	28.78	27.79	26.81	25.83	24.85	23.87	22.88	22.40	20.92	30.74	0.0982	±0.08
1-Iodoheptane[d]		30.41	29.52	28.63	27.75	26.86	25.97	25.09	24.20	23.31	32.18	0.08865	±0.03
1-Fluoro-octane[c]	24.97	24.03	23.10	22.16	21.22	20.28	19.34	18.41	17.47	16.53	25.91	0.0938	±0.08
1-Chloro-octane	28.68	27.72	26.76	25.80	24.83	23.87	22.91	21.95	20.99	20.03	29.64	0.0961	±0.08
2-Chloro-octane[c]	27.40	26.40	25.40	24.40	23.40	22.40					28.40	0.1000	±0.10
1-Bromo-octane	30.07	29.14	28.22	27.29	26.36	25.43	24.50	23.58	22.65	21.72	31.00	0.0928	±0.04
1-Iodo-octane	31.60	30.68	29.77	28.85	27.94	27.02	26.11	25.19	24.28		32.51	0.09146	±0.07
1-Chlorononane	29.29	28.34	27.38	26.43	25.48	24.53	23.58	22.62	21.67	20.72	30.24	0.0952	±0.10
1-Bromononane	30.47	29.57	28.68	27.78	26.89	26.00	25.10	24.23	23.31	22.42	31.36	0.0894	±0.07
1-Chlorodecane	29.82	28.89	27.95	27.02	26.08	25.14	24.21	23.27	22.34	21.40	30.76	0.0936	±0.01
1-Bromodecane		29.55	28.69	27.84	26.98	26.13	25.28	24.41			32.26	0.0856	±0.07
1-Chloroundecane		29.30	28.40	27.50	26.60	25.71	24.81	23.91	23.02	22.12	31.09	0.0897	±0.03
1-Bromoundecane		30.22	29.36	28.50	27.63	26.77	25.91	25.05	24.19	23.33	31.94	0.0861	±0.05
1-Bromododecane		30.83	29.94	29.06	28.18	27.30	26.42	25.53	24.65	23.77	32.59	0.08819	±0.05
1-Bromotetradecane[c]	32.05	31.17	30.30	29.42	28.54	27.66	26.78	25.91	25.03	24.15	32.93	0.0878	±0.08
1-Chlorohexadecane[c]	32.10	31.10	30.10	29.10							33.10	0.1000	±0.10

TABLE 12. Alkyl halides [237]—Continued

Compound	Surface tension (±0.10)										Least squares constants		σ_γ
	10°	20°	30°	40°	50°	60°	70°	80°	90°	100 °C	a	b	
1-Bromohexadecane [c]	32.15	31.65	30.79	29.93	29.06	28.20	27.34	26.48	25.62	24.76	33.37	0.0861	±0.05
1-Bromo-2-ethoxy-ethane [c]	30.85	29.72	28.59	27.46	26.33	25.21	24.08	22.95	21.82	.....	31.98	0.1129	±0.05
1-Iodohexadecane [f]	.....	32.73	31.85	30.97	30.09	29.21	28.33	27.45	26.57	25.69	34.49	0.0880	±0.04

[a] Ref. [232] (V).
[b] Ref. [192] (A).
[c] Ref. [243] (A).
[d] Ref. [91] (A).
[e] Ref. [157] (A).
[f] Ref. [42] (A) (±0.15).

TABLE 13. Polyaloalkanes

(Differential Capillary Rise-A)

Compound	Surface tension										Least squares constants		σ_γ
	15°	25°	35°	45°	55°	65°	75°	85°	95°	105 °C	a	b	
1,1,2,2-Tetrachloro-ethane [b]	36.85	35.58	34.41	33.04	31.78	30.51	29.24	27.97	26.70	25.44	38.75	0.1268	±0.12
1,1,2,2-Tetrabromo-ethane [b]	50.18	48.71	47.25	45.79	44.32	42.86	41.40	39.93	38.47	.....	52.37	0.1463	±0.05
1,1,1-Trichloroethane [a]	26.40	25.14	23.89	22.64	21.38	20.13	.....	.....	.....	.....	28.28	0.1242	±0.05
1,2,3-Tribromopro-pane [b]	.....	44.82	43.56	42.29	41.02	39.75	38.49	37.22	35.95	34.69	47.99	0.1267	±0.12
Bromodichloromethane [b]	33.17	31.87	30.58	29.29	27.99	26.70	25.40	24.11	.....	.....	35.11	0.1294	±0.05
Chloroform [c]	27.97	26.67	25.38	24.08	22.79	21.49	20.20	.....	.....	.....	29.91	0.1295	±0.07
Bromoform [a]	46.18	44.87	43.56	42.25	40.95	39.64	38.33	37.02	35.71	.....	48.14	0.1308	±0.27
Carbon tetrachloride [c]	27.65	26.43	25.21	23.98	22.76	21.53	20.31	19.09	17.86	16.64	29.19	0.1224	±0.20
Pentachloroethane [d]	35.32	34.14	32.97	31.79	30.61	29.43	28.25	27.08	.....	.....	37.09	0.1178	±0.02
1,1,2-Trichloroethane [e]	35.37	34.02	32.67	31.32	29.97	28.62	27.27	25.92	24.57	23.21	37.40	0.1351	±0.70

[a] Ref. [250] (±0.10).
[b] Ref. [256] (±0.3).
[c] Ref. calculated [230] (V), [82].
[d] Ref. [91] (±0.2).
[e] Ref. [192] (±0.7).

TABLE 13.1. Dialkyl oxalates [126]

(Maximum Bubble Pressure-A)

Ester	Surface tension (±0.10)				Least squares constants		σ_γ
	20°	40°	60°	85 °C	a	b	
Dihexyl	30.45	28.74	27.02	24.88	32.16	0.0856	±0.01
Diheptyl	31.29	29.51	27.54	24.87	33.26	0.0987	±0.03

TABLE 14.2. Alkyl isonicotinates [126]

(Maximum Bubble Pressure-A)

Ester	Surface tension (±0.10)				Least squares constants		σ_γ
	20°	40°	60°	85 °C	a	b	
Methyl	40.83	38.49	36.12	33.18	43.19	0.1178	±0.01
Ethyl	37.15	35.02	32.89	30.23	39.26	0.1065	±0.01
Propyl	35.22	33.23	31.23	28.73	37.22	0.09984	±0.01
Butyl	34.77	32.88	30.99	28.63	36.66	0.09444	±0.01
Pentyl	33.92	32.24	30.55	28.45	35.60	0.0841	±0.02
Hexyl	33.46	31.73	29.99	27.83	35.20	0.08676	±0.01
Heptyl	33.81	32.00	30.20	27.94	35.62	0.0904	±0.06

TABLE 14.3. Methyl pyridyl ketones [126]

(Maximum Bubble Pressure-A)

Ketone	Surface tension (±0.10)				Least squares constants		σ_γ
	20°	40°	60°	85 °C	a	b	
2-Pyridyl	39.65	37.30	34.95	32.01	42.00	0.1175	±0.02
3-Pyridyl	44.66	42.26	39.86	36.86	47.06	0.1200	±0.02
4-Pyridyl	44.01	41.51	39.00	35.88	46.51	0.1251	±0.02

TABLE 14.4. Alkyl picolinates [126]

(Maximum Bubble Pressure-A)

Ester	Surface tension (±0.10)				Least squares constants		σ_γ
	20°	40°	60°	85 °C	a	b	
Methyl	43.48	41.31	39.15	36.43	45.64	0.1082	±0.01
Ethyl	39.72	37.57	35.43	32.75	41.86	0.1072	±0.01
Propyl	36.98	35.04	33.10	30.67	38.92	0.09697	±0.05
Butyl	35.86	33.95	32.05	29.66	37.77	0.0954	±0.01
Pentyl	34.62	32.90	31.17	29.03	36.34	0.0861	±0.01
Hexyl	34.12	32.33	30.53	28.29	35.91	0.0896	±0.01
Heptyl	33.35	31.65	29.96	27.84	35.04	0.0847	±0.03

TABLE 14.5. Alkyl nicotinates [126]

(Maximum Bubble Pressure-A)

Ester	Surface tension (±0.10)				Least squares constants		σ_γ
	20°	40°	60°	85 °C	a	b	
Methyl		39.03	36.66	33.72	43.77	0.1184	±0.00
Ethyl	37.80	35.56	33.32	30.52	40.04	0.1120	±0.02
Propyl	36.11	34.16	32.20	29.76	38.07	0.0978	±0.02
Isopropyl	33.82	31.61	29.39	26.62	36.04	0.1108	±0.04
Butyl	35.22	33.34	31.47	29.13	37.09	0.0936	±0.01
sec-Butyl	34.42	32.00	29.58	26.56	36.83	0.1208	±0.40
tert-Butyl	33.94	32.27	30.61	28.53	35.60	0.0832	±0.40
Pentyl	34.23	32.57	30.91	28.83	35.89	0.0830	±0.06
Hexyl	33.71	31.96	30.20	28.01	35.46	0.0876	±0.01
Heptyl	33.28	31.59	29.88	27.77	34.98	0.0848	±0.00

TABLE 14.6. Pyridine and alkylpyridines [126]

(Maximum Bubble Pressure-A)

Compound	Surface tension (±0.10)				Least squares constants		σ_γ
	20°	40°	60°	85 °C	a	b	
Pyridine	37.21	34.60	31.98	28.72	39.82	0.1306	±0.80
2-Methyl-	33.62	31.14	28.65	25.54	36.11	0.1243	±0.04
2-Ethyl-	32.01	29.72	27.44	24.58	34.29	0.1142	±0.07
2-Propyl-	31.36	29.21	27.07	24.38	33.51	0.1074	±0.11
2-Butyl-	31.02	29.03	27.05	24.56	33.01	0.0994	±0.01
2-Pentyl-	30.98	29.02	27.06	24.61	32.94	0.0980	±0.01
2-Hexyl-	30.62	28.86	27.09	24.89	32.38	0.0881	±0.02
2-Heptyl-	30.84	29.14	27.44	25.30	32.55	0.0853	±0.03
3-Methyl-	35.04	32.74	30.43	27.55	37.35	0.1153	±0.02
3-Ethyl-	33.77	31.57	29.38	26.63	35.97	0.1099	±0.02
3-Propyl-	32.48	30.46	28.45	25.92	34.50	0.1009	±0.04
3-Butyl-	31.90	29.97	28.03	25.62	33.83	0.0966	±0.06
3-Pentyl-	31.61	29.78	27.96	25.68	33.43	0.0912	±0.01
3-Hexyl	31.11	29.46	27.81	25.75	32.76	0.0825	±0.02
3-Heptyl-	31.25	29.57	27.89	25.79	32.93	0.0840	±0.01
4-Methyl-	35.43	33.15	30.86	28.01	37.71	0.1141	±0.02
4-Ethyl-	33.72	31.52	29.33	26.58	35.92	0.1099	±0.01
4-Propyl-	32.08	30.05	28.01	25.47	34.12	0.1018	±0.05
4-Isopropyl-	33.69	31.57	29.44	26.78	35.82	0.1063	±0.06
4-Butyl-	32.37	30.47	28.56	26.19	34.27	0.0951	±0.01
4-*sec*-Butyl-	34.71	32.76	30.80	28.36	36.66	0.0976	±0.01
4-*tert*-Butyl-	33.58	31.68	29.77	27.40	35.48	0.0951	±0.005
4-Pentyl-	32.41	30.45	28.48	26.03	34.37	0.0981	±0.05
4-(1-Ethylpropyl)-	33.22	31.09	28.95	26.29	35.35	0.1066	±0.000
4-Hexyl-	31.66	30.07	28.49	26.51	33.24	0.0792	±0.01
4-Heptyl-	32.18	30.47	28.75	26.61	33.90	0.08575	±0.015
4-(1-Propylbutyl)-	31.46	29.68	27.90	25.67	33.24	0.0890	±0.008
4-(1-Hexylheptyl)-	31.27	29.54	27.82	25.67	32.99	0.0861	±0.000
2,3- Dimethyl-	33.24	31.10	28.97	26.29	35.38	0.1069	±0.02
2,4- Dimethyl-	33.16	30.76	28.37	25.38	35.55	0.1197	±0.04
2,5 Dimethyl-	32.31	30.05	27.78	24.96	34.57	0.1131	±0.02
2,6-Dimethyl-	31.59	29.27	26.96	24.06	33.91	0.1159	±0.11
3,5-Dimethyl-	33.82	31.66	29.49	26.79	35.98	0.1081	±0.03
4-Ethyl-3-methyl-	36.02	33.70	31.39	28.49	38.34	0.1159	±0.03

TABLE 14.7. Alkyl orthogermanates [19]

(Capillary Rise Method-A)

Ester	Surface tension (±0.15)					Least squares constants	
	20°	25°	30°	35°	40 °C	*a*	*b*
Tetramethyl	22.89	22.49	22.08	21.68	21.27	24.51	0.0810
Tetraethyl	23.67	23.23	22.79	22.35	21.91	25.43	0.0880
Tetrapropyl	24.06	23.61	23.16	22.72	22.27	25.85	0.0895
Tetraisopropyl	21.17	20.76	20.35	19.95	19.54	22.80	0.0815
Tetrabutyl	24.45	24.00	23.54	23.09	22.64	26.26	0.0905
Tetraisobutyl	23.68	23.25	22.81	22.38	21.95	25.41	0.0865
Tetra-*sec*-butyl	23.95	23.47	23.00	22.53	22.07	25.79	0.0930
Tetra-*tert*-butyl	23.14	22.74	22.34	21.94	21.54	24.74	0.0800
Tetrapentyl	24.65	24.20	23.76	23.31	22.87	26.43	0.0890
Tetrakis(2,2-dimethylpropyl)	23.86	23.39	22.93	22.44	21.96	25.75	0.0950

TABLE 15.1. 3-Methoxypropionates [2]

(Maximum Bubble Pressure Method-A)

Ester	Surface tension (±0.15)				Least squares constants	
	20°	40°	60°	85 °C	*a*	*b*
Methyl	30.83	28.49	26.15	23.22	33.17	0.1170
Ethyl	29.26	27.22	25.19	22.65	31.29	0.1017
Propyl	28.42	26.43	24.43	21.94	30.42	0.0998
Butyl	28.48	26.58	24.67	22.30	30.38	0.0951
Pentyl	28.59	26.75	24.90	22.59	30.44	0.0924
Hexyl	28.76	27.00	25.25	23.05	30.52	0.0879
Heptyl	28.86	27.24	25.61	23.59	30.48	0.0811

TABLE 15.2. 3-Ethoxypropionates [2]

(Maximum Bubble Pressure Method-A)

Ester	Surface tension (±0.15)				Least squares constants	
	20°	40°	60°	85 °C	*a*	*b*
Methyl	28.71	26.73	24.74	22.27	30.70	0.0993
Ethyl	27.84	25.89	23.93	21.49	29.79	0.0976
Propyl	27.25	25.38	23.50	21.16	29.12	0.0936
Butyl	26.78	25.10	23.43	21.33	28.46	0.0839
Pentyl	27.23	25.57	23.91	21.83	28.89	0.0832
Hexyl	27.63	26.00	24.36	22.32	29.26	0.0816
Heptyl	28.26	26.54	24.81	22.65	29.99	0.0863

TABLE 15.3. 3-Propoxypropionates [2]

(Maximum Bubble Pressure Method-A)

Ester	Surface tension (±0.15)				Least squares constants	
	20°	40°	60°	85 °C	*a*	*b*
Methyl	28.26	26.37	24.47	22.09	30.16	0.0949
Ethyl	27.33	25.42	23.52	21.13	29.24	0.0954
Propyl	26.99	25.23	23.46	21.26	28.75	0.0831
Butyl	26.79	25.14	23.50	21.44	28.43	0.0822
Pentyl	27.10	25.51	23.93	21.95	28.68	0.0792
Hexyl	27.32	25.82	24.30	22.44	28.82	0.0751
Heptyl	27.88	26.29	24.71	22.72	29.47	0.0794

TABLE 15.4. 3-Butoxypropionates [2]

(Maximum Bubble Pressure Method-A)

Ester	Surface tension (±0.15)				Least squares constants	
	20°	40°	60°	85 °C	*a*	*b*
Methyl	28.27	26.44	24.60	22.31	30.10	0.0916
Ethyl	27.23	25.44	23.64	21.40	29.03	0.0898
Propyl	27.11	25.39	23.66	21.51	28.83	0.0861
Butyl	26.76	25.19	23.63	21.67	28.33	0.0784
Pentyl	27.41	25.70	24.00	21.86	29.12	0.0854
Hexyl	27.74	26.16	24.55	22.56	29.34	0.0798
Heptyl	28.17	26.59	25.00	23.02	29.76	0.0793

TABLE 15.5. 3-Pentyloxypropionates [2]

(Maximum Bubble Pressure Method-A)

Ester	Surface tension (±0.15)				Least squares constants	
	20°	40°	60°	85 °C	*a*	*b*
Methyl	28.37	26.59	24.82	22.60	30.14	0.0887
Ethyl	27.36	25.71	24.05	21.98	29.02	0.0828
Propyl	27.00	25.50	23.99	22.10	28.51	0.0754
Butyl	27.35	25.81	24.26	22.33	28.90	0.0773
Pentyl	27.68	26.10	24.51	22.54	29.26	0.0791
Hexyl	27.94	26.41	24.90	22.98	29.47	0.0763
Heptyl	28.34	26.77	25.21	23.25	29.90	0.0782

TABLE 15.6. 3-Hexyloxypropionates [2]

(Maximum Bubble Pressure Method-A)

Ester	Surface tension (±0.15)				Least squares constants	
	20°	40°	60°	85 °C	*a*	*b*
Methyl	28.54	26.83	25.14	23.01	30.23	0.0849
Ethyl	27.63	25.99	24.34	22.28	29.28	0.0823
Propyl	27.59	25.98	24.36	22.34	29.21	0.0808
Butyl	27.84	26.18	24.51	22.44	29.50	0.0831
Pentyl	28.20	26.55	24.90	22.84	29.85	0.0825
Hexyl	28.35	26.78	25.22	23.26	29.91	0.0782
Heptyl	28.41	27.03	25.66	23.93	29.79	0.0689

TABLE 15.7. 3-Heptyloxypropionates [2]

(Maximum Bubble Pressure Method-A)

Ester	Surface tension (±0.15)				Least squares constants	
	20°	40°	60°	85 °C	*a*	*b*
Methyl	28.33	26.68	25.03	22.98	29.98	0.0824
Ethyl	27.57	26.00	24.42	22.45	29.15	0.0788
Propyl	27.87	26.19	24.52	22.42	29.55	0.0839
Butyl	28.01	26.44	24.86	22.90	29.59	0.0788
Pentyl	28.32	26.89	25.47	23.68	29.75	0.0714
Hexyl	28.71	27.13	25.55	23.57	30.29	0.0790
Heptyl	28.77	27.44	26.11	24.45	30.10	0.0665

TABLE 15.8. Butoxyacetates [2]

(Maximum Bubble Pressure Method-A)

Ester	Surface tension (±0.15)				Least squares constants	
	20°	40°	60°	85 °C	*a*	*b*
Methyl	28.12	26.13	24.15	21.66	30.11	0.0994
Ethyl	27.39	25.55	23.72	21.42	29.23	0.0919
Propyl	27.40	25.63	23.87	21.66	29.16	0.0882
Butyl	27.13	25.48	23.83	21.77	28.78	0.0825
Pentyl	27.41	25.76	24.12	22.06	29.06	0.0824
Hexyl	27.59	25.98	24.38	22.37	29.19	0.0802
Heptyl	27.75	26.16	24.56	22.57	29.34	0.0796

TABLE 16. Alkanesulfonyl chlorides [176]

(Capillary Rise Method-A)

Sulfonyl chloride	Surface tension (±0.1)							Least squares constants	
	20°	25°	30°	35°	40°	45°	50 °C	*a*	*b*
Ethane-	41.1	40.5	39.9	39.3	38.7	38.1	37.5	43.43	0.1177
1-Propane-	38.0	37.5	36.9	36.4	35.8	35.3	34.8	40.14	0.1074
1-Butane-	35.4	34.9	34.4	33.9	33.4	32.9	32.4	37.33	0.0977
1-Pentane-	33.1	32.6	32.2	31.7	31.3	30.8	30.4	34.90	0.0909
1-Hexane-	31.1	30.7	30.3	29.8	29.4	29.0	28.6	32.80	0.0849

TABLE 17.1. Alkanesulfonic acids [14]

(Capillary Rise Method-V)

Compound	Surface tension (±1.5)							Least squares constants	
	18°	25°	35°	45°	55°	65°	75 °C	a	b
Methanesulfonic acid	----	50.05	49.15	48.26	47.37	46.48	45.58	52.28	0.0893
Ethanesulfonic acid	44.26	43.68	42.86	42.03	41.21	40.38	39.56	45.74	0.08239

TABLE 17.2. Alkyl thiosulfites [227]

(Max. Bubble Pressure-A)

Thiosulfite	Surface tension (±0.10)					Least squares constants	
	18°	20°	22°	24°	26 °C	a	b
Methyl	32.88	32.76	32.64	32.52	32.39	33.99	0.0614
Ethyl	30.56	30.27	29.97	29.68	29.39	33.21	0.1471
Propyl	29.78	29.60	29.42	29.34	29.07	31.37	0.0886
Butyl	29.47	29.28	29.10	28.91	28.72	31.14	0.0929

TABLE 17.3. Alkyl sulfates [237]

(Capillary Rise Method-A)

Sulfate	Surface tension (±0.10)										Least squares constants		σ_γ
	15°	20°	30°	40°	50°	60°	70°	80°	90°	100°	120 °C	a	b	
Methyl	39.52	38.93	37.76	36.61	35.44	34.28	33.12	31.96	30.79	----	----	41.26	0.1163	±0.08
Ethyl	34.01	33.52	32.54	31.57	30.59	29.61	28.64	27.66	26.69	25.71	23.76	35.47	0.0976	±0.04
Propyl	32.49	32.03	31.11	30.19	29.27	28.35	27.43	26.51	25.59	24.67	22.83	33.87	0.0920	±0.09
Butyl	31.59	31.15	30.27	29.40	28.52	27.64	26.77	25.89	25.02	24.14	22.39	32.90	0.0876	±0.11

TABLE 17.4. Alkyl sulfides [237]

(Capillary Rise Method-A)

Sulfide	Surface tension (±0.10)													Least squares constants		σ_γ
	5°	10°	15°	20°	30°	40°	50°	60°	70°	80°	90°	100°	120 °C	a	b	
Methyl		25.26	24.86	24.46										26.07	0.0805	±0.07
Ethyl		26.22	25.67	25.12	24.01	22.91	21.80	20.69						27.33	0.1106	±0.01
Propyl			26.81	26.29	25.25	24.22	23.18	22.15	21.11	20.08	19.04			28.36	0.1035	±0.11
Isopropyl		24.16	23.67	23.18	22.21	21.23	20.26	19.29	18.31	17.34	16.36			25.13	0.0974	±0.11
Butyl			27.69	27.23	26.30	25.38	24.45	23.53	22.60	21.68	20.75			29.08	0.0925	±0.02
Isobutyl			25.36	24.91	24.01	23.11	22.21	21.32	20.42	19.52	18.62			26.71	0.0899	±0.08
sec-Butyl		26.77	26.29	25.81	24.84	23.88	22.92	21.96	21.00	20.03	19.07			27.73	0.0962	±0.08
1-Pentyl			28.24	27.80	26.92	26.05	25.17	24.29	23.42	22.55	21.67			29.55	0.0876	±0.04
Isopentyl			26.38	25.97	25.15	24.32	23.50	22.68	21.85	21.03	20.20	19.38	17.74	27.62	0.0824	±0.09
Hexyl				28.41	27.57	26.73	25.89	25.05	24.21	23.37	22.53			30.09	0.0840	±0.03
Heptyl				29.32	28.51	27.70	26.88	26.07	25.26	24.45	23.64			30.94	0.0811	±0.02
Octyl				30.25	29.32	28.38	27.44	26.50	25.56	24.63	23.69			32.13	0.0938	±0.26
Ethyl methyl	26.99	26.34	25.70	25.06	23.77	22.49								27.63	0.1286	±0.12
Butyl methyl				26.23	25.19	24.15	23.11	22.07	21.03	19.99	18.95			28.31	0.1040	±0.03
Isobutyl methyl				25.07	24.06	23.05	22.04	21.03	20.02	19.01	18.00			27.09	0.1010	±0.02
tert-Butyl methyl			24.00	23.48	22.44	21.41	20.37	19.34						25.55	0.1035	±0.00
Butyl ethyl			26.97	26.47	25.46	24.45	23.44	22.43						28.49	0.1010	±0.03
tert-Butyl ethyl				23.54	22.58	21.63	20.67	19.72	18.76	17.81	16.85			25.45	0.0955	±0.04

TABLE 17.4. Alkyl sulfides [237]—Continued

Compound	Surface tension (±0.1)			Least squares constants	
	20°	25°	30 °C	a	b
Dipropyl sulfide[a]	26.1	25.6	25.0	28.2	0.1050
Dibutyl sulfide[a]	27.1	26.7	26.2	28.8	0.0850

[a] Max. Bubble Pressure-A. Ref. [153].

TABLE 17.5. Alkyl disulfides [237]

(Capillary Rise Method-A)

Disulfide	Surface tension (±0.10)											Least squares constants		σ_γ
	15°	20°	30°	40°	50°	60°	70°	80°	90°	100°	120 °C	a	b	
Methyl	34.74	34.06	32.72	31.38	30.03	28.69						36.75	0.1343	±0.02
Ethyl	31.43	30.91	29.87	28.83	27.79	26.76	25.72	24.68	23.64			32.99	0.1039	±0.06
Propyl	31.03	30.53	29.53	28.53	27.53	26.54	25.54	24.54	23.54			32.53	0.0999	±0.09
Isopropyl	28.84	28.37	27.42	26.48	25.53	24.58	23.64	22.69	21.75			30.26	0.0946	±0.15
Butyl	31.02	30.55	29.62	28.68	27.75	26.82	25.88	24.95	24.01			32.42	0.0934	±0.07
Isobutyl	28.41	27.97	27.10	26.22	25.35	24.48	23.60	22.73	21.85			29.72	0.0874	±0.06
tert-Butyl	28.01	27.51	26.50	25.50	24.50	23.50	22.50	21.49	20.49			29.51	0.1002	±0.35
1-Pentyl	30.01	29.61	28.80	27.99	27.18	26.37	25.56	24.75	23.94	23.13	21.51	31.23	0.0810	±0.09
Isopentyl	28.87	28.46	27.64	26.83	26.01	25.19	24.38	23.56	22.75	21.93	20.30	30.09	0.0816	±0.10

TABLE 17.6. Alkyl sulfites [237]

(Capillary Rise Method-A)

Sulfite	Surface tension (±0.10)											Least squares constants		σ_γ
	15°	20°	30°	40°	50°	60°	70°	80°	90°	100°	120 °C	a	b	
Methyl	34.60	33.97	32.72	31.47	30.21	28.96	27.71	26.46	25.20			36.48	0.1253	±0.05
Ethyl		29.58	28.50	27.42	26.33	25.25	24.17	23.09	22.00			31.75	0.1083	±0.06
Propyl	29.16	28.69	27.77	26.84	25.91	24.98	24.05	23.13	22.20	21.27	19.41	30.55	0.0928	±0.07
Isopropyl	26.59	26.14	25.24	24.34	23.44	22.55	21.65	20.75	19.85	18.95	17.15	27.94	0.0899	±0.10
Butyl	29.26	28.81	27.91	27.01	26.11	25.22	24.32	23.42	22.52			30.61	0.0899	±0.06
Isobutyl	27.53	27.10	26.22	25.34	24.46	23.59	22.71	21.83	20.96	20.08	18.33	28.85	0.0877	±0.07
1-Pentyl	29.34	28.92	28.09	27.25	26.41	25.57	24.73	23.90	23.06	22.22	20.54	30.60	0.0838	±0.10
Isopentyl	28.29	27.86	26.99	26.13	25.27	24.41	23.55	22.68	21.82			29.58	0.0862	±0.06

TABLE 17.7. Methyl sulfoxide [34]

(Maximum Bubble Pressure-A)

Surface tension (±0.20)							Least squares constants	
20°	25°	30°	35°	40°	50°	60 °C	a	b
43.54	42.86	42.41	41.73	41.17	40.05	38.94	45.78	0.1145

TABLE 18. Amides [228]

(Diff. Cap. Rise)

Compound	Surface tension (±0.5)							Least squares constants		σ_γ
	25°	45°	65°	85°	100°	110°	120° C	a	b	
Formamide[a]	57.02	55.34	53.66	51.97	50.71	49.87	49.03	59.13	0.0842	±0.05
Acetamide				38.98	37.45	36.43	35.41	47.66	0.1021	±0.02
Propionamide				31.32	29.96	29.05	28.14	39.05	0.0909	±0.01
Lactamide				43.73	42.52	41.72	40.92	50.56	0.08035	±0.01

Compound	Surface tension (±0.5)						Least squares constants		σ_γ
	130°	140°	150°	160°	170°	180 °C	a	b	
Benzamide	38.09	37.39	36.69	35.98	35.27	34.57	47.26	0.0705	±0.10
o-Hydroxybenzamide		40.81	40.02	39.23	38.44	37.65	51.87	0.0790	±0.04
2-Phenylacetamide				33.65	32.86	32.08	46.26	0.0788	±0.02

[a] Ref. [157] (A) (±0.2).

TABLE 19.1. Isopropylamine [108]

(Maximum Bubble Pressure-N_2)

Surface tension (±2.0)										Least squares constants		σ_γ
−70°	−60°	−50°	−40°	−30°	−20°	−10°	10°	20°	30 °C	a	b	
26.71	25.74	24.77	23.80	22.83	21.85	20.88	18.94	17.97	16.99	19.91	0.09719	±0.80

TABLE 19.2. Primary, secondary, and tertiary amines [249]

(Diff. Cap. Rise-A)

Compound	Surface tension (±0.10)									Least squares constants		σ_γ
	15°	20°	30°	40°	50°	60°	70°	80°	90 °C	a	b	
Methylamine[b]	20.64	19.89	18.41	16.92						22.87	0.1488	±0.15
Dimethylamine[a]	27.61	26.97	25.70	24.44						29.50	0.1265	±0.15
Trimethylamine[a]	14.55	13.97	12.84	11.71						16.24	0.1133	±0.15
Ethylamine[a]	20.57	19.89	18.51	17.14						22.63	0.1372	±0.15
Diethylamine	21.00	20.42	19.28	18.14						22.71	0.1143	±0.09
Triethylamine		20.72	19.72	18.73	17.74	16.75				22.70	0.0992	±0.03
Propylamine	23.00	22.37	21.13	19.89						24.86	0.1243	±0.15
Dipropylamine	23.33	22.82	21.79	20.77	19.75	18.73	17.71	16.68	15.66	24.86	0.1022	±0.07
Diisopropylamine	20.21	19.68	18.60	17.52	16.44	15.37				21.83	0.1077	±0.07
Tripropylamine		22.82	21.95	21.07	20.19	19.31	18.43	17.56	16.68	24.58	0.0878	±0.04
Butylamine	24.56	24.00	22.87	21.75	20.63	19.51				26.24	0.1122	±0.05
Isobutylamine		22.30	21.20	20.11	19.02	17.93				24.48	0.1092	±0.06
sec-Butylamine		21.64	20.58	19.52						23.75	0.1057	±0.04
tert-Butylamine[c]	17.90	17.38	16.36	15.33						19.44	0.1028	±0.02
Dibutylamine	25.07	24.60	23.64	22.69	21.74	20.79	19.84	18.88	17.93	26.50	0.0952	±0.03
Diisobutylamine	22.63	22.18	21.26	20.35	19.44	18.53	17.62	16.70	15.79	24.00	0.0912	±0.06
Di-*sec*-butylamine	23.20	22.70	21.70	20.70	19.70	18.70				24.70	0.0999	±0.04
Tributylamine		24.81	23.98	23.15	22.31	21.48	20.65	19.82	18.99	26.47	0.0831	±0.04
Triisobutylamine[e]	22.61	22.30	21.68	21.06	20.44	19.83	19.21	18.59	17.97	23.54	0.0619	±0.09
Pentylamine		25.20	24.18	23.16	22.13	21.11	20.09	19.07	18.04	27.25	0.1023	±0.03
Isopentylamine		23.81	22.81	21.81	20.80	19.80	18.80	17.79	16.79	25.81	0.1002	±0.06
tert-Pentylamine[c]	20.78	20.34	19.48	18.61	17.74	16.87	16.01			22.08	0.08676	±0.34
Dipentylamine	26.59	26.15	25.26	24.38	23.50	22.62	21.74	20.85	19.97	27.91	0.0882	±0.11
Diisopentylamine	24.75	24.32	23.47	22.61	21.75	20.89	20.04	19.18	18.32	26.04	0.08575	±0.10
Tripentylamine	26.67	26.24	25.39	24.54	23.69	22.85	22.00	21.15	20.30	27.94	0.0849	±0.06
Triisopentylamine	24.75	24.34	23.52	22.70	21.88	21.07	20.25	19.43	18.61	25.98	0.0819	±0.07
Allylamine		24.92	23.63	22.34						27.49	0.1287	±0.06
Hexylamine	26.76	26.26	25.24	24.22	23.20	22.19	21.17	20.15	19.14	28.29	0.1017	±0.05
Isohexylamine[c]	23.77	23.39	22.64	21.89	21.14	20.38	19.63	18.88	18.13	24.90	0.07527	±0.10
Dihexylamine[i]		27.45	26.55	25.66	24.76	23.87	22.97	22.07	21.18	29.24	0.08957	±0.10
Heptylamine	24.79	24.39	23.61	22.93	22.05	21.26	20.48	19.70	18.91	25.96	0.07828	±0.13
Ethylenediamine		41.97	40.58	39.18	37.78	36.38	34.98	33.59	32.19	44.77	0.1398	±0.02
Cyclohexylamine	32.41	31.81	30.63	29.44	28.25	27.06	25.87	24.69	23.50	34.19	0.1188	±0.07
Dicyclohexylamine	34.23	33.74	32.77	31.80	30.82	29.85	28.88	27.91	26.93	35.69	0.0973	±0.05
Benzylamine		39.90	38.69	37.48	36.26	35.05	33.84	32.63	31.41	42.33	0.1213	±0.05
Dibenzylamine[d]	41.64	41.10	40.01	38.93	37.84	36.75	35.67	34.58	33.50	43.27	0.1086	±0.08
Ethyl methylcarbamate		32.48	31.47	30.48	29.47	28.47	27.47	26.46	25.46	34.48	0.1002	±0.90
N-Nitrosodimethylamine[c]	38.98	38.36	37.12	35.88	34.64	33.41	32.17	30.93	29.69	40.84	0.1239	±0.07
N-Nitrosodiethylamine[c]	33.58	33.07	32.05	31.03	30.00	28.98	27.96	26.94	25.92	35.11	0.1021	±0.07
N-Nitrosodipropylamine[c]		31.64	30.67	29.70	28.72	27.75	26.78	25.81	24.83	33.59	0.0973	±0.05
N-Nitrosodibutylamine[c]	30.79	30.36	29.49	28.62	27.75	26.89	26.02	25.15	24.29	32.09	0.0867	±0.01
N-Nitrosodipentylamine[j]	30.66	30.24	29.41	28.58	27.74	26.91	26.08	25.24	24.41	31.91	0.08332	±0.08
N-Nitrosodihexylamine[i]	30.47	30.07	29.22	28.40	27.57	26.74	25.91	25.08	24.25	31.71	0.08287	±0.04
N,*N*-Diethylbenzylamine	30.26	29.79	28.87	27.95	27.02	26.10	25.18	24.26	23.33	31.64	0.0923	±0.13
Aniline[b, f, h, i]	43.21	42.67	41.56	40.50	39.41	38.33	37.24	36.15	35.06	44.83	0.1085	
o-Toluidine[f]	41.23	40.68	39.59	38.49	37.40	36.31	35.21	34.12	33.02	42.87	0.1094	±0.07
m-Toluidine[f]		38.37	37.39	36.41	35.43	34.46	33.48	32.50	31.52	40.33	0.0979	±0.11
p-Toluidine[f]					34.79	33.84	32.88	31.92	30.97	39.58	0.0957	±0.08
N-Methylaniline[e]	37.87	37.38	36.41	35.44	34.47	33.50	32.53	31.56	30.59	39.32	0.09698	±0.17
N-Ethylaniline		36.86	35.79	34.72	33.65	32.58	31.51	30.44	29.37	39.00	0.1070	±0.06
N-Propylaniline		34.79	33.84	32.89	31.94	31.00	30.05	29.10	28.15	36.69	0.0949	±0.05
N-Butylaniline		33.91	33.04	32.17	31.29	30.42	29.55	28.68	27.81	35.65	0.0871	±0.07
N,*N*-Dimethylaniline		36.04	34.99	33.94	32.89	31.85	30.80	29.75	28.70	38.14	0.1049	±0.07
N,*N*-Diethylaniline		34.51	33.47	32.43	31.39	30.35	29.31	28.27	27.23	36.59	0.1040	±0.01
N,*N*-Dipropylaniline		32.92	31.95	30.98	30.01	29.04	28.07	27.10	26.13	34.86	0.0970	±0.09
N,*N*-Dibutylaniline	32.77	32.30	31.36	30.43	29.49	28.55	27.62	26.68	25.75	34.17	0.0936	±0.07

TABLE 19.2. Primary, secondary, and tertiary amines [249]—Continued

Compound	Surface tension (±0.10)									Least squares constants		σ_γ
	15°	20°	30°	40°	50°	60°	70°	80°	90 °C	a	b	
N,*N*-Diisobutylaniline [e]	31.18	30.75	29.89	29.03	28.16	27.30	26.44	25.58	24.72	32.47	0.0861	±0.40
Phenylhydrazine [d]	------	45.56	44.26	42.97	41.68	40.39	39.10	37.80	36.51	48.14	0.1292	±0.04
o-Chloroaniline [e]	42.05	41.60	40.70	39.79	38.89	37.99	37.08	36 18	35.27	43.41	0.0904	±0.50
N-Methyl-*N*-nitrosoaniline [b]	45.70	45.12	43.96	42.80	41.63	40.47	39.31	38.15	36.99	47.44	0.1161	±0.06
N-Ethyl-*N*-nitrosoaniline	41.71	41.20	40.16	39.13	38.10	37.07	36.04	35.00	33 97	43.26	0.1032	±0.21
N-Nitrosobenzylamine [c]	45 55	44 94	43.74	42.54	41.33	40.13	38.93	37.73	36 52	47.35	0.1203	±0.02
2,4-Xylidine [f]	37.85	37.35	36.35	35.36	34.36	33.37	32.37	31.37	30.38	39.34	0.09957	±0.07
Ethyl nitrilotriacetate	35.18	34.67	33.64	32.61	31.58	30.55	29.52	28.49	27.46	36.73	0.1030	±0.10

(High Melting)

Compound	Surface tension											Least squares constants		σ_γ
	50°	60°	75°	85°	95°	100°	120°	140°	160°	180°	200 °C	a	b	
Diphenylamine [d]	------	39.26	37.73	36.72	35.70	35.19	33.16	31.12	29.09	27.05	25.02	45.36	0.1017	±0.03
Tribenzylamine [d]	------	------	------	------	33.35	32.88	30.97	29.06	27.16	25.25	23.34	42.41	0.09534	------
p-Chloroaniline [b]	------	------	40.45	39.35	38.25	37.70	35.50	33.30	31.11	28.91	26.71	48.69	0.1099	±0.08
N,*N*-Dimethyl-*o*-nitroaniline [g]	38.11	37.26	35.98	35.12	34.27	33.84	32.14	30.43	28.70	------	------	42.38	0.08536	±0.10
N,*N*-Dimethyl-*m*-nitroaniline [g]	------	------	37.60	36.60	35.60	35.10	33.10	31.10	29.10	------	------	45.10	0.1000	±0.10

[a] Ref. [223] (V) calc.
[b] Ref. [215] (Maximum Bubble Pressure-A) (±1.0).
[c] Ref. [250] (±0.1).
[d] Ref. [228] (±0.5).
[e] Ref. [108] (Maximum Bubble Pressure-N_2) (±2.0).
[f] Ref. [26] (Maximum Bubble Pressure-A) (±0.2).
[g] Ref. [139] (Maximum Bubble Pressure-A) (±0.15).
[h] Ref. [179] (Capillary Rise-A) (±0.3).
[i] Ref. [125] (Capillary Rise-A) (±0.4).
[j] Ref. [25] (Maximum Bubble Pressure-A) (±0.15).

TABLE 19.3. Aminoalcohols [195]

(Cap. Rise-A)

Compound	Surface tension (±0.10)								Least squares constants		σ_γ
	15°	25°	35°	45°	55°	65°	75°	85 °C	a	b	
2-Aminoethanol [a]	49.45	48.30	47.20	46.08	44.97	43.85	42 73	41 62	51.11	0.1117	±0.02
3-Amino-1-propanol	45.5	44.7	44.0	43.2	42.5	41.7	41.0	40.2	46.6	0.0750	±0.10
N-Methyl-2,2′-iminodiethanol	40.5	39.8	39.1	38.4	37.7	37.0	36.3	35.6	41.6	0.0700	±0.10
2-Isopropylaminoethanol	41.6	40.7	39.8	38.9	38.0	37.1	36.2	35.3	43.0	0.0900	±0.10
2,2′,2″-Nitrilotriethanol	------	47.2	46.4	45.6	44.8	44.0	43.2	42.4	49.2	0.0800	±0.10

[a] Ref. [178] (±0.15).

TABLE 20. Anilides and urethans [228]

(Diff. Cap. Rise-A)

Compound	Surface tension (±0.5)								Least squares constants		σ_γ
	60°	70°	80°	90°	100°	120°	140°	150 °C	a	b	
Formanilide	39.05	38.17	37.30	36.42	35.55	33.80	------	------	44.30	0.0875	±0.03
Acetanilide	------	------	------	------	------	35.27	33.44	32.53	46.21	0.0912	±0.03
N-Methylacetanilide	------	------	------	------	------	30.66	28.73	27.77	42.20	0.0962	±0.01
N-Ethylacetanilide	34.77	33.51	32.24	30.98	29.72	27.20	24.67	------	42.34	0.1262	±0.37
Methyl carbamate[a]	38.34	37.16	35.98	34.81	33.63	31.28	28.92	27.74	45.40	0.1177	±0.07
Ethyl ethylcarbamate	31.93	30.75	29.57	28.39	27.21	24.85	22.49	21.30	39.02	0.1181	±0.34
Ethyl propylcarbamate[a]	29.13	28.28	27.43	26.59	25.74	24.05	22.35	21.50	34.21	0.0847	±0.11
Ethyl carbanilate	36.53	35.35	34.18	33.00	31.83	29.48	27.13	25.95	43.58	0.1175	±0.34

[a] Ref. [83] (A) (±0.30).

TABLE 21. Aromatic alcohols

Compound	Surface tension										Least squares constants		σ_γ
	70°	80°	90°	100°	120°	140°	160°	180°	200°	220 °C	a	b	
Phenethyl alcohol[a]	35.61	34.58	33.54	32.50	30.42	28.35	26.27	24.20	22.12	------	42.88	0.1038	±0.04
Tetrahydrofurfuryl alcohol[a]	32.90	31.90	30.89	29.88	27.86	25.85	23.83	------	------	------	39.96	0.1008	±0.02
p-Methylbenzyl alcohol[b]	33.98	33.12	32.27	31.42	29.72	28.02	26.32	------	------	------	39.93	0.08507	±0.25
1-Naphthalene-methanol[b]	------	41.38	40.21	39.04	36.70	34.36	32.02	------	------	------	50.74	0.1170	±0.50
Benzyl alcohol[c]	28.58	27.20	25.82	24.44	21.68	18.92	16.15	13.39	------	------	38.25	0.1381	±0.03
Triphenylmethanol[d]	------	------	------	------	------	------	------	28.24	25.24	22.24	55.28	0.1502	------

Compound	Surface tension										Least squares constants		σ_γ
	10°	20°	30°	40°	50°	60°	70°	80°	90°	100 °C	a	b	
dextro-4-Phenyl-2-butanol[e]	36.48	35.61	34.74	33.87	32.99	32.12	31.25	30.38	29.51	28.64	37.35	0.08711	------
levo-4-Phenyl-2-butanol[e]	36.66	35.73	34.79	33.85	32.91	31.98	31.04	30.10	29.16	28.23	37.60	0.09373	±0.03
DL-4-Phenyl-2-butanol[e]	36.64	35.67	34.70	33.73	32.76	31.79	30.82	29.85	28.88	27.91	37.61	0.09703	------
levo-1-Phenyl-1-propanol[e]	34.89	33.95	33.02	32.08	31.15	30.22	29.28	28.35	27.41	26.48	35.82	0.0934	±0.02
DL-1-Phenyl-1-propanol[e]	34.92	34.00	33.07	32.15	31.23	30.31	29.38	28.46	27.54	26.62	35.84	0.09222	------

[a] Ref. [247] (Capillary Rise-A) (±0.10).
[b] Ref. [106] (Maximum Bubble Pressure-A) (±0.15).
[c] Ref. [224] (Capillary Rise-A) (±0.10).
[d] Ref. [92] (Capillary Rise-A) (±0.4).
[e] Ref. [207] (Capillary Rise-A).

TABLE 22. Aromatic esters

Compound	Surface tension												Least squares constants		σ_γ
	10°	20°	40°	60°	80°	100°	120°	140°	160°	170°	190°	200 °C	a	b	
Methyl salicylate[a]	40.98	39.80	37.45	35.11	32.76	30.40	28.06	25.71	23.37	22.19	------	------	42.15	0.1174	±0.26
Methyl *m*-hydroxybenzoate[a]	------	------	------	------	39.63	37.82	36.01	34.20	32.39	31.48	29.67	28.77	46.87	0.0905	±0.13
Methyl *p*-hydroxybenzoate[a]	------	------	------	------	------	------	------	35.77	33.75	32.73	30.70	29.69	49.97	0.1014	±0.16
Benzyl benzoate[d]	------	45.95	43.81	41.68	39.55	37.42	35.29	33.16	31.03	29.96	27.83	26.77	48.07	0.1065	±1.9
Ethyl salicylate[e]	39.91	38.82	36.64	34.45	32.27	30.09	27.91	25.73	23.54	22.45	20.27	19.18	41.00	0.1091	±0.51
Ethyl *m*-hydroxybenzoate[e]	------	------	------	------	------	34.42	32.52	30.63	28.73	------	------	------	43.92	0.09495	±0.03
Ethyl *p*-hydroxybenzoate[e]	------	------	------	------	------	------	33.68	31.84	30.01	29.09	27.25	26.33	44.69	0.09173	±0.02
Diethyl phthalate[f]	37.51	36.54	34.62	32.69	30.77	28.84	------	------	------	------	------	------	38.47	0.0963	±0.07
Dipentyl phthalate[f]	31.82	31.08	29.60	28.13	26.65	25.17	23.69	22.21	------	------	------	------	32.56	0.0739	±0.09
Ethyl α-campholanate[d]	28.46	27.64	26.02	24.39	22.76	21.13	19.51	17.88	16.25	15.44	14.81	13.00	29.27	0.08137	±0.03
Methyl *p*-toluenesulfonate[e]	------	------	41.26	39.42	37.59	35.76	33.93	32.09	------	------	------	------	44.92	0.09162	±0.14
Ethyl ethanesulfonate[f]	37.05	36.04	34.01	31.98	29.95	27.92	------	------	------	------	------	------	38.07	0.1015	±0.03
Ethyl phenylpropiolate[f]	40.22	39.18	37.11	35.03	32.96	30.88	28.80	------	------	------	------	------	41.26	0.1038	±0.04
Ethyl 3-hydroxyatropic acid[g]	------	37.67	35.57	33.48	31.38	29.29	27.20	------	------	------	------	------	39.75	0.1047	±0.06
Ethyl 2-*O*-benzoyl-*DL*-lactate[h]	36.62	35.61	33.58	31.56	29.53	27.51	25.49	------	------	------	------	------	37.63	0.1012	±0.16
Methyl *DL*-3-phenylhydracrylate[h]	39.88	38.91	36.97	35.03	33.09	31.15	------	------	------	------	------	------	40.85	0.09696	±0.05

[a] Ref. [27] (Maximum Bubble Pressure-A) (±0.3).
[b] Ref. [207] (Capillary Rise Method-A) (±0.20).
[c] Ref. [125] (Capillary Rise Method-A) (±0.3).
[d] Ref. [108] (Maximum Bubble Pressure-N_2) (±2.0).
[e] Ref. [93] (Capillary Rise Method-A) (±0.40).
[f] Ref. [255] (Capillary Rise Method-A) (±0.20).
[g] Ref. [260] (Capillary Rise Method-A) (±0.40).
[h] Ref. [95] (Capillary Rise Method-A) (±0.30).

TABLE 23. Benzene and its alkyl derivatives [44]

(Maximum Bubble Pressure Method-A)

Compound	Surface tension (±0.10)										Least squares constants		σ_γ
	10°	20°	30°	40°	50°	60°	70°	80°	90°	100 °C	a	b	
Benzene[a]	30.21	28.88	27.56	26.25	24.96	23.67	22.40	21.20					
Toluene	29.72	28.52	27.33	26.15	24.95	23.77	22.58	21.39	20.20	19.01	30.90	0.1189	±0.01
Ethylbenzene[c]	30.39	29.29	28.20	27.10	26.01	24.92	23.82	22.73	21.63	20.54	31.48	0.1094	±0.04
Propylbenzene[c]	30.05	28.98	27.90	26.83	25.75	24.68	23.60	22.53	21.45	20.38	31.13	0.1075	±0.01
Cumene[c]	29.27	28.21	27.16	26.09	25.05	24.00	22.94	21.89	20.83	19.78	30.32	0.1054	±0.01
Butylbenzene	30.25	29.23	28.20	27.18	26.15	25.13	24.10	23.08	22.05	21.03	31.28	0.1025	±0.01
Isobutylbenzene	28.43	27.47	26.51	25.55	24.58	23.62	22.66	21.70	20.74	19.78	29.39	0.0961	±0.01
sec-Butylbenzene	29.50	28.52	27.54	26.57	25.59	24.61	23.63	22.65	21.67	20.69	30.48	0.0979	±0.01
tert-Butylbenzene	29.11	28.13	27.14	26.16	25.17	24.19	23.20	22.22	21.23	20.25	30.10	0.0985	±0.01
Pentylbenzene[a]	30.38	29.45	28.52	27.59	26.65	25.72	24.79	23.86	22.93	22.00	31.31	0.0931	±0.04
1-Phenylhexane[a]	30.96	30.01	29.15	28.10	27.15	26.20	25.25	24.29	23.34	22.39	31.91	0.0952	±0.04
o-Xylene[c]	31.41	30.31	29.21	28.11	27.00	25.90	24.80	23.70	22.60	21.50	32.51	0.1101	±0.03
m-Xylene[c]	30.13	29.02	27.92	26.81	25.71	24.61	23.50	22.40	21.29	20.19	31.23	0.1104	±0.02
p-Xylene[c]		28.55	27.47	26.39	25.32	24.25	23.17	22.10	21.02	19.95	30.69	0.1074	±0.05
o-Ethyltoluene	31.27	30.21	29.15	28.09	27.03	25.97	24.91	23.85	22.79	21.73	32.33	0.1060	±0.01
m-Ethyltoluene	30.18	29.08	27.97	26.87	25.76	24.66	23.55	22.45	21.34	20.24	31.29	0.1105	±0.01
p-Ethyltoluene	29.90	28.83	27.75	26.68	25.60	24.53	23.45	22.38	21.30	20.23	30.98	0.1075	±0.01
o-Diethylbenzene	31.32	30.29	29.26	28.24	27.20	26.18	25.15	24.12	23.09	22.06	32.35	0.1029	±0.01
m-Diethylbenzene	30.21	29.17	28.12	27.08	26.04	24.99	23.94	22.90	21.85	20.81	31.26	0.1045	±0.01
p-Diethylbenzene	30.03	29.00	27.97	26.94	25.91	24.88	23.85	22.82	21.79	20.76	31.06	0.1030	±0.01
1,2,4-Trimethylbenzene[c]	30.73	29.71	28.68	27.66	26.63	25.61	24.58	23.56	22.53	21.51	31.76	0.1025	±0.02
1,2,3-Trimethylbenzene[c]	29.87	28.83	27.79	26.75	25.71	24.67	23.63	22.59	21.55	20.51	30.91	0.1040	±0.01
1-Phenyldecane[d]	31.85	30.97	30.08	29.21	28.32	27.44	26.55	25.67	24.79	23.91	32.73	0.08822	±0.01
Mesitylene[c]	28.89	28.00	27.10	26.20	25.31	24.41	23.51	22.62	21.72	20.82	29.79	0.08966	±0.16
Cymene[b]	27.95	27.08	26.20	25.32	24.44	23.57	22.69	21.81	20.94	20.06	28.83	0.0877	±0.14

[a] Ref. [1].
[b] Ref. [179] (Capillary Rise Method-A) (±0.2).
[c] Ref. [181] (Capillary Rise Method-A) (±0.10).
[d] Ref. [112] (Capillary Rise Method-N_2) (±0.10).
[e] Ref. [108] (N_2) (±2.0).

TABLE 24.1. *N*-methylacetanilide—boron trifluoride [260]

(Capillary Rise Method-A)

Surface tension (±0.06)								Least squares constants	
115°	120°	125°	130°	135°	140°	145°	150 °C	a	b
38.39	37.90	37.41	36.92	36.43	35.94	35.45	34.95	49.67	0.0981

TABLE 24.2. Boron tribromide [229]

(Maximum Bubble Pressure-A)

Surface tension									Least squares constants	
22°	25°	30°	40°	50°	60°	70°	80°	84 °C	a	b
29.1	28.7	28.1	26.8	25.5	24.2	22.9	21.7	21.2	31.90	0.1280

TABLE 24.3. Tributylboroxin [146]

(Maximum Bubble Pressure-H_2)

Surface tension (±0.15)						Least squares constants		σ_γ
5°	10°	15°	20°	25°	30 °C	a	b	
27.37	26.88	26.39	25.89	25.40	24.91	27.86	0.0983	±0.13

TABLE 24.4. Boron trifluoride addition compounds [260]

(Capillary Rise Method-V)

Compound	Surface tension (±0.2)									Least squares constants	
	15°	20°	30°	40°	50°	60°	70°	80°	90 °C	a	b
Methyl formate—boron trifluoride			39.47	38.53	37.59	36.65				42.28	0.09383
Ethyl formate—boron trifluoride	35.91	35.33	34.16	32.99	31.84	30.66				37.66	0.11672
Methyl acetate—boron trifluoride						32.42	31.12	29.82	28.52	40.22	0.1300
Ethyl acetate—boron trifluoride				31.59	30.72	29.86	29.00			35.04	0.08633
Dimethyl ether—boron trifluoride		33.18	32.01	30.84	29.66	28.49				35.53	0.1173
Diethyl ether—boron trifluoride	30.29	29.84	28.95	28.06	27.17	26.27				31.63	0.08927

TABLE 24.5. Boroxin [47]

(Capillary Rise Method-V)

Surface tension (±0.10)										Least squares constants	
240°	250°	260°	265°	270°	275°	280°	285°	290°	295 K	a	b
27.5	26.2	25.0	24.3	23.7	23.0	22.4	21.7	21.1	20.5	58.31	0.1283

TABLE 24.6. Dimethylaminoboron dichloride [24]

(Capillary Rise Method-V)

Surface tension (±0.10)															Least squares constants		σ_γ
40°	−35°	−30°	−25°	−20°	−15°	−10°	−5°	5°	10°	15°	20°	25°	30°	35 °C	a	b	
33.39	33.23	32.95	32.70	32.13	30.85	30.56	29.77	28.82	28.25	27.40	27.09	26.07	25.06	24.90	29.24	0.1238	±0.02

TABLE 25. Bromine [31]

(Capillary Rise Method-V)

Surface tension (±0.6)										Least squares constants	
5°	10°	15°	20°	25°	30°	35°	40°	45°	50 °C	a	b
44.7	43.6	42.9	41.8	40.9	40.0	39.2	38.3	37.3	36.4	45.5	0.1820

TABLE 26.1. Halides of phosphorus [249]

(Capillary Rise Method-A)

Compound	Surface tension (±0.10)								Least squares constants		σ_γ
	15°	25°	35°	45°	55°	65°	75°	85 °C	a	b	
Phosphorus trichloride	29.24	27.97	26.71	25.44	24.18	22.91	------	------	31.14	0.1266	±0.06
Phosphoryl chloride	33.31	32.03	30.76	29.48	28.21	26.93	25.66	24.38	35.22	0.1275	±0.07
Phosphorus tribromide	43.42	42.13	40.85	39.57	38.28	37.00	------	------	45.34	0.1283	±0.10
Phosphorus triiodide [a]	------	------	------	------	------	57.26	56.58	55.90	61.66	0.06771	±0.11
Thiophosphoryl chloride [b]	35.09	33.82	32.55	31.28	30.00	28.73	27.46	26.19	37.00	0.1272	------

[a] Ref. [108] (Maximum Bubble Pressure-N_2) (±2.0). [b] Ref. [192] (Capillary Rise Method-A) (±0.7).

TABLE 26.2. Stannic chloride [169]

(Maximum Bubble Pressure-A)

Surface tension (±0.15)										Least squares constants		σ_γ
10°	20°	30°	40°	50°	60°	70°	80°	90°	100 °C	a	b	
28.79	27.65	26.52	25.38	24.25	23.12	21.98	20.85	19.71	18.58	29.92	0.1134	±0.05

TABLE 26.3. Antimony trichloride [219]

(Maximum Bubble Pressure-A)

Surface tension (±1.0)								Least squares constants		σ_γ
80°	90°	100°	120°	140°	160°	180°	200 °C	a	b	
47.97	46.73	45.49	43.01	40.54	38.06	35.59	33.11	47.87	0.1238	±0.17

TABLE 26.4. Silicon tetrachloride [177]

(Capillary Rise Method-A)

Surface tension (±1.0)								Least squares constants	
5°	10°	15°	20°	25°	30°	40°	50 °C	a	b
20.28	19.78	19.29	18.79	18.29	17.79	16.80	15.80	20.78	0.099624

TABLE 26.5. Arsenious chloride [108]

(Maximum Bubble Pressure-N_2)

Surface tension (±2.0)										Least squares constants		σ_γ
−10°	10°	20°	30°	40°	50°	60°	80°	100°	110 °C	a	b	
42.65	40.69	39.71	38.74	37.76	36.78	35.80	33.85	31.89	30.91	41.67	0.09781	±0.12

TABLE 26.6. Arsenious bromide [108]

(Maximum Bubble Pressure-N_2)

Surface tension (±2.0)										Least squares constants		σ_γ
40°	50°	60°	70°	80°	100°	120°	140°	160°	180 °C	a	b	
50.24	49.19	48.15	47.11	46.07	43.98	41.89	39.81	37.72	35.64	54.41	0.1043	±0.56

TABLE 26.7. Phosphorus trioxide [190]

(Capillary Rise Method)

Surface tension									Least squares constants		σ_γ
30°	40°	50°	60°	70°	80°	100°	120°	140 °C	a	b	
36.97	35.81	34.65	33.49	32.33	31.18	28.86	26.54	24.23	40.44	0.1158	±0.15

TABLE 27. Campholenic and campholanic acid [108]

(Maximum Bubble Pressure-N_2)

Compound	Surface tension (±2.0)										Least squares constants		σ_γ
	20°	40°	60°	80°	100°	120°	140°	160°	180°	200 °C	a	b	
α-Campholenic acid	35.12	33.40	31.67	29.95	28.23	26.51	24.79	23.06	21.34	19.62	36.84	0.0861	±0.26
α-Campholanic acid	32.21	30.63	29.06	27.48	25.91	24.34	22.76	21.19	19.61	18.04	33.78	0.0787	±0.71

TABLE 28. Chelated co-ordination compounds and related compounds [221]

(Max. Bubble Pressure-A)

Compound	Surface tension (±0.20)										Least squares constants		σ_y
	10°	15°	20°	30°	40°	50°	60°	70°	80°	100 °C	a	b	
Tetraethyllead	29.53	29.05	28.56	27.59	26.62	25.65	24.69	23.72	22.75	------	30.50	0.0969	±0.17
2,4-Hexanedionoberyllium	------	------	------	------	------	32.33	31.78	30.73	29.68	27.58	38.08	0.1050	±0.04
2,4-Pentanedione	32.14	31.56	30.99	29.85	28.70	27.56	26.42	25.27	24.13	------	33.28	0.1144	±0.17
2,4-Hexanedione	------	30.72	30.22	29.21	28.21	27.21	26.21	------	------	------	32.22	0.1002	±0.01
1-Phenyl-1,3-butanedione	------	------	------	------	------	39.35	38.83	38.31	37.79	36.74	41.96	0.05215	±0.60
2,4-Pentanedionoboron difluoride	------	------	------	------	------	37.08	36.09	35.10	34.11	32.13	42.04	0.0991	±0.09
Thallous ethoxide	------	38.69	38.26	37.39	36.52	35.64	34.77	------	------	------	40.00	0.0871	±0.15

Compound	Surface tension (±0.20)										Least squares constants		σ_y
	110°	120°	130°	140°	160°	180°	200°	220°	240°	260°	280 °C	a	b	
Dimethyl-(1-phenyl-1,3-butanediono)thallium	------	33.35	32.38	31.40	29.55	------	------	------	------	------	------	45.07	0.09756	±0.06
Thallous formate	81.19	77.30	73.42	69.54	------	------	------	------	------	------	------	123.90	0.3883	±0.50
Thallous acetate	------	------	29.83	28.49	25.82	23.14	20.47	------	------	------	------	47.21	0.01337	±0.05
Thallous nitrate	------	------	------	------	------	------	113.41	111.64	109.86	108.08	------	131.18	0.08884	±0.20
Diphenylmercury	------	36.63	35.80	34.97	33.30	31.64	------	------	------	------	------	46.60	0.0831	±0.14
2,4-Pentanedionoberyllium	28.41	27.47	26.52	25.57	23.68	21.79	------	------	------	------	------	38.83	0.09469	±0.06
Basic beryllium propionate	------	------	------	20.55	18.81	17.08	15.34	------	------	------	------	32.70	0.0868	±0.07
2,4-Pentanedionostannic difluoride	------	------	------	------	------	------	29.18	27.21	25.23	------	------	48.95	0.09884	±0.04
2,4-Pentanedionoaluminum	------	------	------	------	------	------	19.13	17.63	16.12	14.62	13.12	34.16	0.07515	±0.10
Aluminum bromide	24.93	24.23	23.52	22.82	21.41	------	------	------	------	------	------	32.69	0.0705	±0.10

TABLE 29. Cryogenic and low boiling fluids

	Surface tension							Least squares constants		σ_γ
	78°	80°	82°	84°	86°	88°	90 K	a	b	
Nitrogen	8.75	8.30	7.85	7.39	6.94	6.49	6.03	26.42	0.2265	±0.05

Ref. [210] (Capillary Rise Method-V).

	Surface tension ($\gamma = 37.78(1 - T/150.72)^{1.277}$)					Least squares constants		σ_γ
	84°	86°	88°	90°	92 K	a	b	
Argon	13.34	12.84	12.34	11.84	11.34	34.28	0.2493	±0.02

Ref. [210] (Capillary Rise Method-V).

	Surface tension					Least squares constants		σ_γ
	115°	118°	120°	122°	124 K	a	b	
Krypton	8.341	6.474	5.896	5.318	4.740	40.576	0.2890	±0.048

Ref. [67] (Capillary Rise Method-V).

	Surface tension ($\gamma = 0.03703(289.74 - T)^{1.257}$)										σ_γ
	165°	175°	185°	195°	205°	215°	225°	245°	265°	285 K	
Xenon	18.46	16.58	14.74	12.96	11.23	9.55	7.94	4.94	2.30	0.28	±0.10

Ref. [206] (Capillary Rise Method-V).

	Surface tension ($\gamma = 0.352 - 6.9 \times 10^{-3} T^{7/3}$)							
	0.50°	0.75°	1.00°	1.25°	1.50°	1.75°	2.00°	2.1 K
Helium II	0.351	0.347	0.345	0.340	0.334	0.327	0.317	0.313

Ref. [6] (Capillary Rise Method-V).

TABLE 29. Cryogenic and low boiling fluids—Continued

	Surface tension[a]									
	0.361°	0.500°	0.574°	0.647°	0.820°	0.910°	1.132°	1.639°	2.328°	2.992 K
Helium III	0.151	0.150	0.151	0.152	0.149	0.147	0.131	0.111	0.069	0.028

[a] Measured from a greatly enlarged copy of the γ vs $T°$ curve.
Ref. [237] (Capillary Rise Method-V).

	Surface tension ($\gamma = 0.3729 - 0.0081 T^{2.5}$)							
	0.35°	0.50°	0.65°	0.80°	0.95°	1.10°	1.25°	1.40 K
Helium IV	0.373	0.372	0.370	0.368	0.366	0.360	0.359	0.354

Ref. [7] (Capillary Rise Method-V).

	Surface tension ($\gamma = 0.1124(33.19 - t)^{1.112}$)($\pm 0.003$)					
	−258°	−257°	−256°	−255°	−254°	−253 °C
Hydrogen	2.80	2.63	2.41	2.29	2.12	1.95

Ref. [210] (Calculated from Guggenheim-Ferguson equation).

	Surface tension						Least squares constants	
	15°	16°	17°	18°	19°	20 K	a	b
Deuterium hydride	3.713	3.524	3.336	3.148	2.959	2.771	6.537	0.1883

Ref. [77] (Capillary Rise Method-V).

	Surface tension (± 0.2)										Least squares constants		σ_γ
	−202°	−200°	−198°	−196°	−194°	−192°	−190°	−188°	−186°	−184 °C	a	b	
Oxygen	18.01	17.50	16.99	16.48	15.96	15.45	14.94	14.43	13.91	13.40	−33.72	0.2561	±0.02

Ref. [9] (Capillary Rise Method-V).

TABLE 29. Cryogenic and low boiling fluids—Continued

	Surface tension (±0.2)								Least squares constants		σ_γ
	−202°	−200°	−198°	−196°	−194°	−192°	−190°	−188 °C	a	b	
Fluorine	17.15	16.82	16.49	16.16	15.83	15.50	15.17	14.84	−16.10	0.1646	±0.50

Ref. [259] (Capillary Rise Method-V).

	Surface tension (±0.2)						Least squares constants		σ_γ
	−80°	−70°	−60°	−50°	−40°	−30 °C	a	b	
Chlorine	35.05	33.15	31.25	29.36	27.46	25.56	19.87	0.1897	±0.06

Ref. [118] (Capillary Rise Method-V).

	Surface tension (±0.20)										Least squares constants	
	−80°	−70°	−60°	−50°	−40°	−30°	−20°	−10°	10°	20 °C	a	b
Hydrogen fluoride	16.70	15.92	15.13	14.34	13.56	12.77	11.98	11.20	9.62	8.84	10.41	0.07867

Ref. [203] (Maximum Bubble Pressure-N_2).

	Surface tension						Least squares constants		σ_γ
	−192°	−190°	−188°	−186°	−184°	−182 °C	a	b	
Carbon monoxide	9.60	9.19	8.77	8.36	7.94	7.53	−30.20	0.2073	±0.04

Ref. [210] (Capillary Rise Method-V).

	Surface tension (±0.5) ($\gamma = 0.05902(304.26 - t)^{1.25}$)								
	−30°	−20°	−10°	0°	10°	15°	20°	25°	30 °C
Carbon dioxide	10.08	8.06	6.14	4.34	2.67	1.90	1.19	0.57	0.07

Ref. [230, 231] (Capillary Rise Method-V).

TABLE 29. Cryogenic and low boiling fluids—Continued

	Surface tension (±0.2)						Least squares constants	
	−120°	−110°	−100°	−90°	−80°	−70 °C	a	b
Nitryl fluoride	30.51	28.65	26.80	24.95	23.09	21.24	8.26	0.1854

Ref. [92] (Capillary Rise Method-V).

	Surface tension (±0.2)						Least squares constants	
	−100°	−90°	−80°	−75°	−70°	−60 °C	a	b
Nitrogen oxyfluoride	25.65	24.49	23.32	22.74	22.16	20.99	14.00	0.1165

Ref. [94] (Capillary Rise Method-V).

	Surface tension (±0.5)								Least squares constants	
	−75°	−70°	−65°	−60°	−55°	−50°	−45°	−40 °C	a	b
Perchloryl fluoride	24.1	23.3	22.5	21.7	20.9	20.1	19.3	18.5	12.24	0.1576

Ref. [202] (Capillary Rise Method-V).

	Surface tension (±0.2)						Least squares constants		σ_γ
	−90°	−80°	−70°	−60°	−50°	−40 °C	a	b	
Sulfur tetrafluoride	28.47	26.74	25.01	23.27	21.54	19.81	12.87	0.1734	±0.16

Ref. [25] (Capillary Rise Method-V).

	Surface tension (±0.3)				Least squares constants		σ_γ
	−65°	−50°	−40°	−20 °C	a	b	
Sulfur hexafluoride	13.40	11.61	10.42	8.04	5.66	0.1190	±0.01

Ref. [167] (Capillary Rise Method-V).

TABLE 29. Cryogenic and low boiling fluids—Continued

	Surface tension (±0.2)						Least squares constants	
	−80°	−75°	−70°	−65°	−60°	−50 °C	*a*	*b*
Nitrosyl peroxide fluoride	23.36	22.78	22.19	21.61	21.03	19.86	14.03	0.1166

Ref. [94] (Capillary Rise Method-V).

	Surface tension (±0.02)							Least squares constants	
	−60°	−50°	−40°	−30°	−20°	−10°	10 °C	*a*	*b*
Hydrogen disulfide	59.50	57.74	55.98	54.22	52.47	50.71	47.19	48.95	0.1758

Ref. [29] (Capillary Rise Method-V).

	Surface tension (±0.3)							Least squares constants	
	−30°	−25°	−20°	−15°	−10°	−5°	5 °C	*a*	*b*
Hydrogen selenide	26.77	26.03	25.28	24.54	23.80	23.06	21.58	22.32	0.1482

Ref. [183] (Capillary Rise Method-V).

	Surface tension (±0.14)						Least squares constants	
	−30°	−25°	−20°	−15°	−10°	−5 °C	*a*	*b*
Hydrogen telluride	36.89	35.58	34.27	32.96	31.65	30.34	29.03	0.2619

Ref. [183] (Capillary Rise Method-V).

	Surface tension (±0.2)						Least squares constants		σ_7
	−75°	−70°	−65°	−60°	−55°	−50 °C	*a*	*b*	
Hydrogen bromide	28.69	27.65	26.61	25.57	24.53	23.50	13.10	0.2079	±0.02

Ref. [168] (Capillary Rise Method-V).

TABLE 29. Cryogenic and low boiling fluids—Continued

	Surface tension (±1.0)						Least squares constants		σ_γ
	−45°	−40°	−35°	−30°	−20°	−10 °C	a	b	
Nitrosyl chloride	36.21	35.46	34.72	33.97	32.48	30.98	29.49	0.1493	±0.07

Ref. [22] (Capillary Rise Method-A).

	Surface tension ($\gamma = 38.618 - 0.1873T - 0.0003567T^2$)						σ_γ
	90°	95°	100°	105°	110°	115 K	
Methane	18.877	17.611	16.328	15.026	13.707	12.371	0.025

Ref. [67] (Capillary Rise Method-V).

	Surface tension						Least squares constants		σ_γ
	−140°	−130°	−120°	−110°	−100°	−90 °C	a	b	
Ethane	24.48	22.82	21.16	19.50	17.84	16.18	1.24	0.1660	±0.07

Ref. [130] (Capillary Rise Method-V) (±0.12).

	Surface tension						Least squares constants		σ_γ
	−90°	−70°	−50°	−30°	−10°	10 °C	a	b	
Propane	17.09	15.34	13.59	11.84	10.09	8.35	9.22	0.0874	±0.14

Ref. [122] (Capillary Rise Method-V).

	Surface tension									Least squares constants		σ_γ
	−70°	−60°	−50°	−40°	−30°	−20°	−10°	10°	20 °C	a	b	
Butane	23.31	22.50	20.90	19.69	18.49	17.28	16.08	13.66	12.46	14.87	0.1206	±0.04
2-Methylpropane	21.46	20.25	19.15	17.88	16.54	15.30	14.09	11.57	10.30	12.83	0.1236	±0.09
1-Butene	24.45	23.12	21.81	20.48	19.16	17.84	16.51	13.87	12.54	15.19	0.1323	±0.03
2-Butene	25.13	23.84	22.56	21.24	19.98	18.69	17.40	14.82	13.53	16.11	0.1289	±0.03
2-Methylpropene	------	------	21.68	19.98	18.70	17.41	16.13	13.56	12.27	14.84	0.1319	±0.13

Ref. [37] (Capillary Rise Method-V).

TABLE 29. Cryogenic and low boiling fluids—Continued

	Surface tension						Least squares constants		σ_γ
	−90°	−80°	−70°	−60°	−50°	−40 °C	a	b	
Propyne	27.85	26.37	24.88	23.40	21.92	20.44	14.51	0.1482	±0.16

Ref. [142] (Capillary Rise Method-V).

	Surface tension					Least squares constants		σ_γ
	−90°	−80°	−70°	−60°	−50 °C	a	b	
Acetylene	20.84	18.90	16.97	15.03	13.10	3.42	0.1935	±0.05

Ref. [142] (Capillary Rise Method-V).

	Surface tension						Least squares constants		σ_γ
	−160°	−150°	−140°	−130°	−120°	−110 °C	a	b	
Ethylene	27.93	25.08	23.23	21.37	19.52	17.66	−2.73	0.1854	±0.05

Ref. [142] (Capillary Rise Method-V) (±0.14).

	Surface tension						Least squares constants		σ_γ
	−80°	−70°	−60°	−50°	−40°	−30 °C	a	b	
Propylene	21.41	19.98	18.55	17.13	15.70	14.27	9.99	0.1427	±0.07

Ref. [142] (Capillary Rise Method-V).

	Surface tension						Least squares constants		σ_γ
	−50°	−40°	−30°	−20°	10°	20 °C	a	b	
Ethylene oxide	35.98	34.32	32.65	29.99	26.00	24.33	27.66	0.1664	±0.10

Ref. [221] (Maximum Bubble Pressure-A).

TABLE 29. Cryogenic and low boiling fluids—Continued

	Surface tension ($\gamma = 23.41 - 0.3371t - 0.000943t^2$)								σ_γ
	−75°	−70°	−65°	−60°	−55°	−50°	−45°	−40 °C	
Ammonia	43.39	42.39	41.34	40.25	39.10	37.91	36.67	35.38	±0.15

Ref. [210] (Maximum Bubble Pressure-H_2).

	Surface tension (±0.1)								Least squares constants		σ_γ
	−70°	−60°	−50°	−45°	−40°	−35°	−30°	−25 °C	a	b	
Dimethyl ether	25.32	23.84	22.36	21.62	20.88	20.14	19.40	18.67	14.97	0.1478	±0.06

Ref. [142] (Capillary Rise Method-V).

	Surface tension (±0.10)									Least squares constants		σ_γ
	−95°	−85°	−75°	−65°	−55°	−45°	−30°	−20°	−10°	5 °C	a	b	
Carbonyl sulfide	29.02	27.24	25.46	23.68	21.90	20.13	17.46	15.68	13.90	11.22	12.12	0.1779	±0.33

Ref. [164] (Capillary Rise Method-V).

	Surface tension						Least squares constants		σ_γ
	−50°	−40°	−30°	−20°	−10°	10 °C	a	b	
Sulfur dioxide	36.32	34.37	32.42	30.48	28.53	24.63	26.58	0.1948	±0.15

Ref. [212] (Capillary Rise Method-V).

	Surface tension						Least squares constants		σ_γ
	−100°	−80°	−60°	−40°	−20°	−10 °C	a	b	
Nitrous oxide	25.41	21.35	17.28	13.22	9.15	7.12	5.09	0.2032	±0.60

Ref. [175] (Capillary Rise Method-V).

TABLE 29. Cryogenic and low boiling fluids—Continued

	Surface tension					Least squares constants		σ_γ
	−160°	−158°	−156°	−154°	−152 °C	a	b	
Nitric oxide	26.17	25.00	23.83	22.66	21.49	−67.48	0.5853	±0.22

Ref. [32] (Capillary Rise Method-V).

	Surface tension (±0.06)							Least squares constants	
	−116°	−112°	−108°	−104°	−100°	−96°	−92 °C	a	b
Boron trifluoride	20.71	19.82	19.00	18.19	17.38	16.57	15.76	−2.92	0.2030

Ref. [259] (Capillary Rise Method-V).

	Surface tension (±0.06)						Least squares constants	
	−30°	−25°	−20°	−15°	−10°	−5 °C	a	b
Boron trifluoride ether	36.14	35.55	34.96	34.36	33.77	33.17	32.58	0.1188

Ref. [259] (Capillary Rise Method-V).

	Surface tension (±0.10)						Least squares constants		σ_γ
	−150°	−140°	−130°	−120°	−110°	−100 °C	a	b	
Diborane	23.62	21.83	20.05	18.27	16.48	14.70	−3.13	0.1783	±0.03

Ref. [128] (Maximum Bubble Pressure).

	Surface tension (±0.3)								Least squares constants		σ_γ
	−100°	−80°	−60°	−40°	−20°	−10°	−5°	5 °C	a	b	
Carbonyl chloride	37.15	34.24	31.33	28.41	25.50	24.05	23.32	21.86	22.59	0.1456	±0.04

Ref. [165] (Drop Weight-V).

TABLE 29. Cryogenic and low boiling fluids—Continued

	Surface tension											Least squares constants		σ_γ
	−70°	−60°	−50°	−40°	−30°	−20°	−10°	10°	20°	25°	30 °C	a	b	
2-Methyl-2-butene														
(a)	28.60	27.33	26.06	24.78	23.51	22.24	20.97					19.70	0.1271	±0.15
(b)								18.61	17.64	17.15	16.67	19.58	0.09715	

(a) Ref. [198] (Capillary Rise Method-V).
(b) Ref. [1].

TABLE 30.1. Nitriles

(Cap. Rise-A)

Compound	Surface tension (±0.1)									Least squares constants		σ_γ
	15°	20°	30°	40°	50°	60°	70°	80°	90 °C	a	b	
Acetonitrile [a]		29.29	28.03	26.77	25.50	24.24				31.82	0.1263	±0.03
Propionitrile [a]		27.32	26.17	25.02	23.86	22.71				29.63	0.1153	±0.09
Butyronitrile [a]		27.44	26.40	25.36	24.32	23.29	22.25	21.21	20.18	29.51	0.1037	±0.08
Valeronitrile [a]		27.41	26.47	25.53	24.60	23.66	22.72	21.78	20.85	29.28	0.0937	±0.09
Isovaleronitrile [c]	26.34	25.93	25.10	24.27	23.44	22.62	21.79	20.96	20.14	27.58	0.0827	±0.16
Hexanenitrile [a]		27.83	26.92	26.01	25.10	24.20	23.29	22.38	21.48	29.64	0.0907	±0.04
4-Methylvaleronitrile [a]		27.06	26.14	25.22	24.30	23.39	22.47	21.55	20.64	28.89	0.0917	±0.14
Heptanenitrile [b]	28.18	27.75	26.89	26.03	25.17	24.31	23.45	22.59	21.73	29.47	0.0860	±0.16
Octanenitrile [b]	28.41	28.01	27.20	26.40	25.60	24.80	24.00	23.19	22.39	29.61	0.0802	±0.06
Nonanenitrile [b]	29.91	28.50	27.68	26.87	26.05	25.32	24.42	23.60	22.79	30.13	0.0816	±0.06
3-Butenenitrile [a]	29.77	29.23	28.14	27.06	25.97	24.89	23.80	22.72	21.63	31.40	0.1085	±0.04
Decanenitrile [c]	29.89	29.36	28.30	27.24	26.17	25.11	24.05	22.99	21.93	31.48	0.1061	±0.01
Succinonitrile [d]						46.79	45.71	44.63	43.55	53.26	0.1079	±0.01
Lactonitrile [e]	36.87	36.39	35.43	34.47	33.51	32.55	31.59	30.63	29.67	38.31	0.0960	±0.01
Phenylacetonitrile [a]	42.84	42.26	41.10	39.95	38.79	37.64	36.48	35.33	34.17	44.57	0.1155	±0.12
Benzonitrile [a]	39.95	39.37	38.21	37.05	35.89	34.74	33.58	32.42	31.26	41.69	0.1159	±0.07
DL-Mandelonitrile [e]	44.43	43.94	42.97	41.99	41.01	40.03	39.05	38.08	37.90	45.90	0.0978	±0.02
o-Tolunitrile [c]	38.44	37.86	36.70	35.53	34.37	33.21	32.04	30.88	29.71	40.19	0.1164	±0.03
m-Tolunitrile [c]	37.33	36.82	35.81	34.80	33.78	32.77	31.76	30.75	29.73	38.85	0.1013	±0.03
p-Tolunitrile [c]			36.49	35.39	34.29	33.19	32.09	30.99	29.89	39.79	0.1100	±0.02

TABLE 30.1. Nitriles—Continued

Compound	Surface tension										Least squares constants		σ_γ
	15°	20°	25°	30°	40°	50°	60°	70°	80°	90 °C	a	b	
3-(Ethylamino)-propionitrile[b]	33.30	32.83	32.35	31.88	30.93	29.97	29.03	28.07	27.13	26.18	34.73	0.0951	±0.08
3-(Propylamino)-propionitrile[b]	31.81	31.37	30.93	30.48	29.61	28.72	27.84	26.96	26.07	.....	33.13	0.0882	±0.08
3-(Butylamino)-propionitrile[b]	31.21	30.80	30.38	29.97	29.15	28.33	27.51	26.69	25.86	25.04	32.44	0.0822	±0.06
3-(1-Pentylamino)-propionitrile[b]	30.98	29.51	29.13	28.75	27.99	27.28	26.48	25.72	24.96	24.21	31.02	0.0757	±0.09
3-(Hexylamino)-propionitrile[b]	30.20	29.93	29.46	29.09	28.35	27.61	26.88	26.14	25.40	24.66	31.31	0.0739	±0.05
3-(Diethylamino)-propionitrile[b]	31.65	30.18	29.70	29.22	28.27	27.32	26.37	25.42	24.47	.....	32.08	0.0952	±0.05
3-(Dipropylamino)-propionitrile[b]	29.41	28.99	28.57	28.15	27.31	26.46	25.62	24.78	23.94	23.10	30.67	0.0841	±0.04
3-(Dibutylamino)-propionitrile[b]	29.60	29.19	28.77	28.35	27.51	26.67	25.84	25.00	24.16	23.33	30.86	0.0837	±0.03
3-(Di-1-pentylamino)-propionitrile[b]	29.10	28.73	28.35	27.98	27.23	26.48	25.74	24.99	24.24	23.50	30.22	0.0747	±0.01
3-Methoxypropionitrile[b]	36.47	35.88	35.28	34.69	33.51	32.33	31.15	29.97	28.78	27.60	38.24	0.1182	±0.14
3-Ethoxypropionitrile[b]	32.01	31.52	31.02	30.53	29.54	28.55	27.56	26.57	25.58	24.59	33.50	0.0990	±0.06
3-Propoxypropionitrile[b]	30.11	29.75	29.39	29.02	28.30	27.57	26.85	26.12	25.40	24.67	31.20	0.0725	±0.45
3-Butoxypropionitrile[b]	30.33	29.90	29.47	29.04	28.19	27.33	26.47	25.62	24.76	23.91	31.61	0.0856	±0.08
3-Pentyloxypropionitrile[b]	30.78	30.36	29.93	29.51	28.66	27.81	26.96	26.11	25.26	24.41	32.06	0.0850	±0.05
3-Hexyloxypropionitrile[b]	30.74	30.33	29.92	29.52	28.70	27.89	27.08	26.26	25.45	24.63	31.96	0.0814	±0.01
Acrylonitrile[b]	27.81	27.22	26.63	26.05	24.87	23.69	22.51	.....	.....	.....	29.58	0.1178	±0.04
3-Heptyloxy-propionitrile[f]	.....	29.38	29.01	28.63	27.89	27.14	26.40	25.65	24.91	.....	30.87	0.0745	±0.05

[a] Ref. [115] (A) (±0.1).
[b] Ref. [251] (A) (±0.1).
[c] Ref. [91] (A) (±0.2).
[d] Ref. [225] (A) (±0.2).
[e] Ref. [228] (±0.5).
[f] Ref. [2] (±0.1).

TABLE 30.2. Hydrogen cyanide [35]

(Maximum Bubble Pressure-A)

Surface tension ($\gamma = 20.62 - 0.1155t - 7\times10^{-5}t^2$) (±0.2)

−13.3°	−10.0°	−5.0°	5.0°	10.0°	15.0°	18.0°	20.0°	22.0°	25.0 °C
22.16	21.78	21.20	20.02	19.45	18.89	18.56	18.33	18.12	17.78

TABLE 31. Saturated and unsaturated cyano-esters [39]

(Cap. Rise-A)

Compound	Surface tension (±0.10)								Least squares constants		σ_γ
	15°	25°	50°	75°	100°	120°	135°	150 °C	a	b	
Methyl cyanoacetate[a]	39.71	38.63	35.95	33.26	30.58	28.43	26.82	25.21	41.32	0.1074	±0.05
Ethyl cyanoacetate	37.16	36.07	33.34	30.61	27.88	25.70	.....	.....	38.80	0.1092	±0.08
Propyl cyanoacetate[b]	34.28	33.37	31.12	28.86	26.61	24.81	23.45	22.10	35.63	0.0902	±0.10
Butyl cyanoacetate[b]	32.39	31.61	29.65	27.69	25.73	24.16	22.99	21.81	33.57	0.0784	±0.07
Isobutyl cyanoacetate[b]	31.04	30.27	28.35	26.42	24.50	22.96	21.80	20.65	32.20	0.0770	±0.04
Pentyl cyanoacetate[b]	30.10	29.43	27.76	26.08	24.41	23.07	22.06	21.06	31.11	0.0670	±0.10
Ethyl 2-cyano-3-methylbutyrate	30.92	30.01	27.73	25.45	23.17	21.35	.....	.....	32.29	0.0912	±0.01
Ethyl 2-cyano-3-methylvalerate	31.26	30.36	28.10	25.84	23.58	21.77	.....	.....	32.62	0.0904	±0.07
Ethyl 2-cyano-3-ethylvalerate	31.42	30.50	28.20	25.90	23.60	21.76	.....	.....	32.80	0.0920	±0.03
Ethyl 2-cyano-3-methylhexanoate	30.54	29.67	27.50	25.32	23.15	21.41	.....	.....	31.85	0.0870	±0.01
Ethyl 2-cyano-3-ethylhexanoate	30.90	30.03	27.85	25.68	23.50	21.76	.....	.....	32.21	0.0871	±0.06
Ethyl 2-cyano-3-propylhexanoate	30.53	29.67	27.51	25.35	23.19	21.46	.....	.....	31.83	0.0864	±0.08
Ethyl 2-cyano-3-methyl-2-pentenoate	34.87	33.86	31.33	28.81	26.28	24.26	.....	.....	36.39	0.1011	±0.12
Ethyl 2-cyano-3,3-diethylacrylate	34.00	33.02	30.58	28.15	25.71	23.76	.....	.....	35.46	0.0975	±0.02
Ethyl 2-cyano-3-propylcrotonate	33.67	32.74	30.41	28.09	25.77	23.91	.....	.....	35.06	0.0929	±0.01
Ethyl 2-cyano-3-propyl-2-pentenoate	32.23	31.30	28.97	26.65	24.32	22.46	.....	.....	33.63	0.0931	±0.08
Ethyl 2-cyano-3,3-dipropylacrylate	32.91	31.94	29.49	27.05	24.61	22.66	.....	.....	34.38	0.0977	±0.06

[a] Ref. [255] (±0.20).

[b] Ref. [108] (Maximum Bubble Pressure-N_2) (±2.0).

TABLE 32. Cyclopentane and cyclohexane derivatives [246]

(Differential Capillary Rise-A)

Compound	Surface tension (±0.10)								Least squares constants		σ_γ
	15°	20°	30°	40°	50°	60°	70°	80°	90 °C	a	b	
Cyclopentyl methyl ether	27.00	26.43	25.29	24.16	23.02	21.89	.....	.....	.....	28.70	0.1135	±0.03
Cyclopentyl ethyl ether	26.65	26.12	25.06	23.99	22.93	21.87	20.80	19.74	18.67	28.25	0.1064	±0.05
Cyclopentyl formate	32.37	31.79	30.63	29.48	28.32	27.16	26.01	24.85	23.70	34.10	0.1156	±0.07
Cyclopentyl acetate	.....	30.62	29.48	28.34	27.19	26.05	24.91	23.77	22.62	32.91	0.1143	±0.08
Chlorocyclopentane	30.99	30.40	29.22	28.05	26.87	25.69	24.52	23.34	22.17	32.75	0.1176	±0.07
Bromocyclopentane	33.90	33.31	32.14	30.97	29.79	28.62	27.45	26.28	25.10	35.66	0.1173	±0.09
Iodocyclopentane	36.76	36.19	35.06	33.92	32.78	31.64	30.50	29.37	28.23	38.47	0.1138	±0.03
Bicyclohexyl	33.21	32.74	31.79	30.84	29.88	28.93	27.98	27.03	26.08	34.64	0.0951	±0.09
Cyclohexyl methyl ether	28.77	28.21	27.11	26.01	24.90	23.80	22.70	21.60	20.49	30.42	0.1103	±0.04
Cyclohexyl ethyl ether	27.80	27.29	26.26	25.24	24.22	23.20	22.18	21.15	20.13	29.33	0.1022	±0.07
Cyclohexyl formate	32.78	32.22	31.11	30.00	28.88	27.77	26.66	25.54	24.43	34.45	0.11132	±0.09
Cyclohexyl acetate	.....	31.27	30.16	29.05	27.93	26.82	25.71	24.60	23.48	33.50	0.1113	±0.07
Chlorocyclohexane	32.25	31.70	30.60	29.50	28.39	27.29	26.19	25.09	23.99	33.90	0.1101	±0.10
Bromocyclohexane	.....	33.90	32.78	31.66	30.54	29.43	28.31	27.19	26.08	36.13	0.1117	±0.02
Iodocyclohexane	36.81	36.25	35.13	34.02	32.90	31.79	30.67	29.56	28.44	38.48	0.1115	±0.30

TABLE 33. Cyclopropane- and cyclobutane-carboxylic acids and some carboxylates

(Capillary Rise-A)

Compound	Surface tension										Least squares constants		σ_γ
	10°	20°	30°	40°	50°	60°	70°	80°	90°	100 °C	a	b	
Cyclopropanecarboxylic acid [c]		34.48	33.43	32.38	31.33	30.29	29.24	28.19	27.14	26.09	36.58	0.1049	±0.07
Cyclobutanecarboxylic acid [c]		33.62	32.59	31.57	30.54	29.52	28.49	27.47	26.44	25.42	35.67	0.1025	±0.09
Methyl 1,1-cyclopropanedicarboxylate [a]	37.59	36.41	35.23	34.05	32.87	31.69	30.51	28.74	28.15	26.97	38.77	0.1180	±0.02
Ethyl 1,1-cyclopropanedicarboxylate [b]	32.46	31.50	30.53	29.56	28.59	27.63	26.66	25.69	24.72	23.76	33.43	0.09673	±0.20
Diethyl 1,1-cyclopropanedicarboxylate [c]	32.83	31.76	30.69	29.63	28.56	27.50	26.43	25.37	24.30	23.24	33.89	0.1065	±0.11
Dipropyl 1,1-cyclopropanedicarboxylate [c]	31.99	30.99	29.99	28.99	27.99	26.99	25.99	24.99	23.99	22.99	32.99	0.1000	±0.20
Ethyl cyclobutanecarboxylate [b]	31.02	29.86	28.70	27.54	26.38	25.22	24.06	22.90	21.74	20.58	32.18	0.1160	±0.05
Methyl 1,1-cyclobutanedicarboxylate [a]	36.23	35.11	33.99	32.87	31.74	30.62	29.50	27.82	27.26	26.14	37.35	0.1121	±0.17
Dimethyl 1,1-cyclobutanedicarboxylate [c]	36.17	35.04	33.91	32.78	31.65	30.52	29.39	28.26	27.13	26.00	37.30	0.1130	±0.10
Ethyl 1,1-cyclobutanedicarboxylate [b]	33.04	31.94	30.84	29.74	28.63	27.53	26.43	25.33	24.23	23.13	34.14	0.1101	±0.03
Diethyl 1,1-cyclobutanedicarboxylate [c]	32.59	31.54	30.49	29.44	28.38	27.33	26.28	25.23	24.18	23.13	33.64	0.1051	±0.06
Dipropyl 1,1-cyclobutanedicarboxylate [c]	31.64	30.67	29.71	28.74	27.78	26.82	25.85	24.89	23.92	22.96	32.60	0.0964	±0.04
Dibutyl 1,1-cyclobutanedicarboxylate [c]	31.20	30.28	29.35	28.42	27.49	26.57	25.64	24.71	23.79	22.86	32.13	0.0927	±0.16
Methyl 1,1-cyclopentanedicarboxylate [a]	36.34	35.21	34.09	32.96	31.83	30.70	29.57	27.88	27.32	26.19	37.47	0.1128	±0.03
Methyl 1,1-cyclohexanedicarboxylate [a]	36.54	35.47	34.41	33.34	32.28	31.22	30.15	28.56	28.02	26.96	37.70	0.1064	±0.11
Ethyl 1,1-cyclopropanedicarboxylate [b]	33.57	32.53	31.48	30.44	29.39	28.35	27.30	26.26	25.21	24.17	34.62	0.1045	±0.06
Ethyl *trans*-3,3-dimethyl-1,2-cyclopropanedicarboxylate [b]	31.68	30.65	29.61	28.58	27.55	26.52	25.49	24.45	23.42	22.39	32.71	0.1032	±0.08
Ethyl 1,1,2,2-cyclopropanetetracarboxylate [b]					31.51	30.57	29.63	28.69	27.75	26.81	36.21	0.09398	±0.01
Methyl 3-methyl-2-cyclopropene-1,2-dicarboxylate [b]					34.51	33.29	32.07	30.86	29.64	28.42	40.60	0.1218	±0.04
Ethyl 3-methyl-2-cyclopropene-1,2-dicarboxylate [b]				31.55	30.46	29.38	28.30	27.22	26.14	25.06	35.87	0.1081	±0.04
Labile Ethyl 3-methyl-2-cyclopropene-1,2-dicarboxylate [b]			33.50	32.32	31.15	29.98	28.80	27.63	26.45	25.28	37.02	0.1174	±0.01
Ethyl 1-cyano-1-cyclobutanecarboxylate [b]							29.44	28.36	27.29	26.22	36.94	0.1072	±0.13

[a] Ref. [234] (A) (±0.10).
[b] Ref. [220] (Maximum Bubble Pressure-A) (±0.10).
[c] Ref. [115] (A) (±0.10).

TABLE 34. Dialkyl carbonates [194]

(Maximum Bubble Pressure-A)

Compound	Surface tension (±0.15)										Least squares constants		σ_γ
	15°	20°	25°	30°	40°	50°	60°	70°	80°	90 °C	a	b	
Ethyl propyl carbonate	27.11	26.60	26.10	25.60	24.59	23.58	22.57	21.56	20.56	19.55	28.62	0.1008	±0.05
Butyl ethyl carbonate	27.17	26.59	26.22	25.75	24.81	23.86	22.92	21.98	21.04	20.07	28.58	0.0943	±0.08
Ethyl pentyl carbonate	27.51	27.03	26.56	26.09	25.15	24.20	23.26	22.32	21.38	20.43	28.92	0.0943	±0.02
Ethyl hexyl carbonate	28.14	27.66	27.18	26.70	25.74	24.78	23.83	22.87	21.91	20.95	29.58	0.0959	±0.08
Butyl propyl carbonate	27.41	26.93	26.46	25.99	25.05	24.10	23.16	22.22	21.28	19.33	28.82	0.0943	±0.05
Dipentyl carbonate	27.88	27.47	27.06	26.64	25.82	24.99	24.16	23.34	22.51	21.69	29.12	0.0826	±0.22
Dihexyl carbonate	28.48	28.06	27.63	27.21	26.36	25.50	24.65	23.80	22.95	22.10	29.76	0.0851	±0.03
Dimethyl carbonate[a]	29.93	29.25	------	27.91	26.57	25.22	23.88	------	------	------	31.94	0.1343	±0.00
Diethyl carbonate[a]	26.97	26.42	------	25.32	24.22	23.12	22.02	20.92	19.82	18.72	28.62	0.1100	±0.09
Dipropyl carbonate[a]	27.42	26.91	------	25.89	24.88	23.86	22.85	21.83	20.82	19.80	28.94	0.1015	±0.07
Dibutyl carbonate[a]	27.66	27.19	------	26.25	25.31	24.37	23.43	22.49	21.55	20.61	29.07	0.0940	±0.05
Diisobutyl carbonate[a]	25.78	25.31	------	24.39	23.96	22.53	21.60	20.67	19.75	18.82	27.17	0.0928	±0.02

[a] Ref. [250].

TABLE 35. Alkyl alkylxanthates [250]

(Capillary Rise Method-A)

Compound	Surface tension (±0.10)								Least squares constants		σ_γ
	15°	25°	35°	45°	55°	65°	75°	85 °C	a	b	
Ethyl ethylxanthate	34.78	33.72	32.66	31.61	30.55	29.50	28.44	27.38	36.36	0.1056	±0.11
Propyl propylxanthate	33.34	32.37	31.40	30.43	29.45	28.48	27.51	26.54	34.80	0.0972	±0.01
Butyl ethylxanthate	33.25	32.31	31.38	30.45	29.51	28.58	27.64	26.71	34.65	0.0934	±0.06
Ethyl butylxanthate	33.38	32.41	31.45	30.48	29.52	28.55	27.58	26.62	34.83	0.0966	±0.18
Butyl butylxanthate	32.34	31.43	30.53	29.62	28.72	27.81	26.90	26.00	35.70	0.09063	±0.09

TABLE 36. Dodecanols [69]

(Maximum Bubble Pressure-A)

Compound	Surface tension (±0.20)								Least squares constants	
	20°	25°	30°	40°	50°	60°	70°	80 °C	a	b
Dodecyl alcohol	------	29.41	28.96	28.29	27.51	26.75	26.02	25.27	31.25	0.0748
2-Dodecanol	29.16	------	28.24	27.46	26.57	25.83	25.13	24.33	30.66	0.0798
3-Dodecanol	28.60	------	27.65	26.92	26.06	25.35	24.49	23.75	30.12	0.0801
4-Dodecanol	27.83	------	26.94	26.17	25.41	24.53	23.83	23.02	29.34	0.0796
5-Dodecanol	27.45	------	26.54	25.80	25.03	24.17	23.34	22.60	29.02	0.0806
6-Dodecanol	------	------	26.29	25.34	24.57	23.83	23.02	22.21	28.63	0.0803

TABLE 37. Esters of normal dibasic acids and of substituted malonic acids [243]

(Differential Capillary Rise-A)

Ester	Surface tension (±0.1)										Least squares constants		σ_γ
	10°	20°	30°	40°	50°	60°	70°	80°	90°	100 °C	a	b	
Dimethyl malonate[a]	38.51	37.37	36.10	34.89	33.68	32.47	31.26	30.06	28.85	27.64	39.72	0.1208	±0.14
Diethyl malonate[a]	32.87	31.83	30.78	29.74	28.70	27.66	26.62	25.57	24.53	23.49	33.91	0.1042	±0.05
Dipentyl malonate[b]	28.7	28.3	27.5	26.7	25.9	25.1	24.3	23.5	22.7	21.9	29.9	0.0800	±0.60
Dimethyl succinate	37.81	36.62	35.43	34.24	33.04	31.85	30.66	29.47	28.28	27.09	39.00	0.1191	±0.16
Diethyl succinate	32.93	31.89	30.85	29.81	28.76	27.72	26.68	25.64	24.60	23.56	33.97	0.1041	±0.08
Dipropyl succinate	31.61	30.68	29.75	28.82	27.89	26.97	26.04	25.11	24.18	23.25	32.54	0.0929	±0.20
Diisopropyl succinate	29.17	28.24	27.31	26.38	25.45	24.53	23.60	22.67	21.74	20.81	30.10	0.0929	±0.07
Dibutyl succinate	31.57	30.65	29.72	28.80	27.87	26.94	26.02	25.09	24.17	23.24	32.50	0.0926	±0.03
Diisobutyl succinate	29.30	28.45	27.60	26.75	25.89	25.04	24.19	23.34	22.49	21.64	30.15	0.0851	±0.08
Dipentyl succinate	31.07	30.27	29.47	28.67	27.86	27.06	26.26	25.46	24.66	23.86	31.87	0.0801	±0.09
Diisopentyl succinate	30.78	29.92	29.07	28.21	27.36	26.51	25.65	24.80	23.94	23.09	31.63	0.0854	±0.06
Dimethyl glutarate	-------	36.21	35.03	33.85	32.67	31.50	30.32	29.14	27.96	-------	38.57	0.1179	±0.04
Diethyl glutarate	33.33	32.32	31.31	30.30	29.29	28.28	27.27	26.26	25.25	24.24	34.34	0.1010	±0.03
Diethyl malate[c]	38.76	37.14	35.51	33.88	32.25	30.63	-------	-------	-------	-------	40.39	0.1627	±0.30
Dipentyl malate[c]	29.37	28.63	27.96	27.29	26.62	25.95	-------	-------	-------	-------	29.97	0.0670	±0.30
Dimethyl adipate	37.12	35.98	34.85	33.71	32.57	31.43	30.29	29.16	28.02	26.88	38.26	0.1138	±0.09
Diethyl adipate	33.42	32.38	31.33	30.28	29.23	28.19	27.14	26.09	25.05	24.00	34.47	0.1047	±0.10
Dipropyl adipate	32.81	31.83	30.84	29.86	28.88	27.90	26.92	25.93	24.95	23.97	33.79	0.0982	±0.08
Diisopropyl adipate	30.31	29.33	28.34	27.36	26.37	25.39	24.40	23.42	22.43	21.45	31.30	0.0985	±0.13
Dibutyl adipate	32.26	31.37	30.47	29.58	28.68	27.79	26.89	26.00	25.10	24.21	33.16	0.0895	±0.06
Dipentyl adipate	32.11	31.25	30.38	29.51	28.64	27.78	26.91	26.04	25.18	24.31	32.98	0.0867	±0.05
Diisopentyl adipate	30.95	30.10	29.26	28.41	27.57	26.73	25.88	25.04	24.19	23.35	31.79	0.0844	±0.07
Dimethyl suberate	36.75	35.65	34.54	33.43	32.32	31.22	30.11	29.00	27.90	26.79	37.86	0.1107	±0.14
Diethyl suberate	33.57	32.60	31.62	30.65	29.68	28.71	27.74	26.76	25.79	24.81	34.54	0.0973	±0.03
Dipropyl suberate	32.78	31.87	30.96	30.05	29.14	28.24	27.33	26.42	25.51	24.60	33.69	0.0909	±0.04
Dibutyl suberate	32.59	31.69	30.78	29.88	28.98	28.08	27.18	26.27	25.37	24.47	33.49	0.0902	±0.09
Diethyl sebacate	33.72	32.76	31.80	30.84	29.88	28.93	27.97	27.01	26.05	25.09	34.68	0.0959	±0.09
Dipropyl sebacate	33.32	32.38	31.45	30.52	29.58	28.65	27.72	26.79	25.85	24.92	34.25	0.0933	±0.09
Diisopentyl sebacate[d]	31.91	31.11	30.30	29.50	28.69	27.89	27.08	26.28	25.47	24.67	32.72	0.0805	±0.02
Dimethyl pimelate[a]	36.60	35.57	34.53	33.49	32.45	31.42	30.38	29.34	28.31	-------	37.64	0.1037	±0.06
Dimethyl azelate[a]	36.38	35.32	34.25	33.19	32.12	31.06	29.99	28.93	27.86	-------	37.45	0.1065	±0.07
Diethyl oxalate	33.20	32.08	30.96	29.84	28.72	27.61	26.49	25.37	24.25	23.13	34.32	0.1119	±0.05
Dipropyl oxalate	31.18	30.19	29.20	28.21	27.22	26.23	25.24	24.23	23.26	22.27	32.17	0.09898	±0.09
Diisopropyl oxalate	29.44	28.43	27.42	26.41	25.39	24.38	23.37	22.36	21.35	20.34	30.45	0.1011	±0.14
Dibutyl oxalate	30.54	29.63	28.72	27.81	26.89	25.98	25.07	24.16	23.25	22.34	31.45	0.0911	±0.02
Dipentyl oxalate	30.55	29.67	28.78	27.90	27.02	26.14	25.26	24.37	23.49	22.61	31.43	0.0882	±0.06
Diisopentyl oxalate	28.89	28.09	27.28	26.48	25.67	24.86	24.06	23.25	22.45	21.64	29.70	0.0806	±0.02
Methyl dimethyl-malonate[a]	32.15	31.04	29.92	28.81	27.69	26.58	25.46	24.35	23.23	-------	33.27	0.1115	±0.01
Methyl diethyl-malonate[a]	32.13	31.04	29.95	28.86	27.77	26.69	25.60	24.51	23.42	-------	33.22	0.1089	±0.06
Methyl ethylpropyl-malonate[e]	31.55	30.53	29.51	28.49	27.46	26.44	25.42	24.40	23.38	-------	32.57	0.1021	±0.03
Methyl dipropyl-malonate[a]	30.23	29.34	28.46	27.58	26.69	25.81	24.93	24.05	23.16	-------	31.11	0.0883	±0.14
Dimethyl methyl-malonate	34.71	33.51	32.31	31.11	29.90	28.70	27.50	26.30	25.10	23.90	35.91	0.1201	±0.09
Diethyl methylmalonate	31.00	29.95	28.89	27.83	26.77	25.72	24.66	23.60	22.55	21.49	32.06	0.1057	±0.07
Dipropyl methyl-malonate	30.09	29.11	28.12	27.14	26.16	25.18	24.20	23.21	22.23	21.25	31.07	0.0982	±0.05
Dibutyl methylmalonate	-------	28.81	27.90	26.99	26.08	25.18	24.27	23.36	22.45	21.60	30.63	0.0909	±0.06
Dimethyl ethylmalonate	33.52	32.38	31.25	30.11	28.97	27.83	26.69	25.56	24.42	23.28	34.66	0.1138	±0.06
Diethyl ethylmalonate	30.53	29.51	28.50	27.48	26.46	25.44	24.42	23.41	22.39	21.37	31.55	0.1018	±0.10
Dipropyl ethyl-malonate	29.93	28.99	28.04	27.10	26.15	25.20	24.26	23.31	22.37	21.42	30.88	0.0946	±0.13
Dibutyl ethylmalonate	29.71	28.79	27.88	26.97	26.05	25.14	24.23	23.32	22.40	21.49	30.62	0.0913	±0.09

TABLE 37. Esters of normal dibasic acids and of substituted malonic acids [243]—Continued

Ester	Surface tension (±0.1)										Least squares constants		σ_γ
	10°	20°	30°	40°	50°	60°	70°	80°	90°	100 °C	a	b	
Dimethyl propylmalonate	32.37	31.33	30.28	29.24	28.19	27.14	26.10	25.05	24.01	22.96	33.42	0.1046	±0.07
Diethyl propylmalonate	-------	28.93	27.96	26.98	26.00	25.02	24.04	23.07	22.09	21.10	30.89	0.0979	±0.07
Dipropyl propylmalonate	-------	28.68	27.74	26.81	25.88	24.95	24.02	23.08	22.15	21.22	30.54	0.0932	±0.09
Dibutyl propylmalonate		28.39	27.54	26.68	25.82	24.96	24.10	23.25	22.39	21.53	30.11	0.0858	±0.03
Dimethyl pentylmalonate	31.44	30.50	29.55	28.60	27.65	26.71	25.76	24.81	23.87	22.92	32.39	0.0947	±0.06
Diethyl pentylmalonate	29.38	28.53	27.68	26.83	25.98	25.14	24.29	23.44	22.59	21.74	30.23	0.0849	±0.20
Dipropyl pentylmalonate	29.58	28.69	27.79	26.90	26.01	25.12	24.23	23.33	22.44	21.55	30.47	0.0892	±0.02
Dibutyl pentylmalonate	-------	28.44	27.61	26.77	25.94	25.10	24.27	23.44	22.60	21.77	30.11	0.08342	±0.02
Diethyl bromomalonate [i]	33.82	33.08	32.34	31.60	30.86	30.12	29.38	28.64	27.90	27.16	34.56	0.07403	±0.35
Diethyl benzylmalonate [i]	35.84	35.04	34.24	33.45	32.65	31.85	31.05	30.25	29.45	28.65	36.64	0.07985	±0.33
Diethyl *O*-propionyl-malate	-------	-------	-------	29.18	28.30	27.43	26.55	25.68	24.80	23.93	32.68	0.0875	±0.12
Diethyl *O*-butyryl-*l*-malate [c]	31.71	30.77	29.83	28.89	27.95	27.02	26.08	25.14	24.20	23.26	32.65	0.0939	±0.05
Diethyl *O*-valeryl-*l*-malate [f]	30.65	29.81	28.97	28.13	27.28	26.44	25.60	24.76	23.92	23.08	31.49	0.0841	±0.24
Diethyl *O*-hexanoyl-*l*-malate [g]	30.75	29.85	28.95	28.05	27.15	26.25	25.35	24.45	23.55	22.65	31.65	0.0900	±0.12
Diethyl *O*-heptanoyl-*l*-malate [f]	30.69	29.84	28.99	28.14	27.29	26.44	25.59	24.74	23.89	23.04	31.54	0.08497	±0.13
Diethyl *O*-octanoyl-*l*-malate [f]	30.53	29.70	28.88	28.05	27.22	26.39	25.56	24.73	23.91	23.06	31.36	0.08283	±0.01
Diethyl *O*-nonanoyl-*l*-malate [f]	31.31	30.41	29.51	28.62	27.72	26.82	25.92	25.02	24.12	23.21	32.21	0.08987	±0.45
Diethyl *O*-decanoyl-*l*-malate [f]	30.74	29.91	29.09	28.27	27.45	26.62	25.80	24.98	24.16	23.33	31.56	0.08225	±0.17
Dimethyl *dextro*-tartrate [b]	-------	-------	-------	-------	-------	39.17	28.24	37.31	36.38	35.45	44.75	0.09299	±0.04
Dimethyl *DL*-tartrate [b]	-------	-------	-------	-------	-------	-------	-------	-------	35.15	34.23	43.44	0.0921	±0.03
Diethyl *dextro*-tartrate [i]	-------	37.97	36.97	35.97	34.96	33.96	32.96	31.96	30.95	29.95	39.98	0.1003	±0.14

[a] Ref. [234] (A) (±0.1).
[b] Ref. [133] (A) (Drop Weight-A) (±0.3).
[c] Ref. [132] (A) (Drop Weight-A) (±0.3).
[d] Ref. [256] (A) (±0.3).
[f] Ref. [95] (A) (±0.3).
[g] Ref. [179] (A) (±0.3).
[h] Ref. [157] (A).
[i] Ref. [108] (Maximum Bubble Pressure-N_2) (±2.0).

TABLE 38.1. Isomeric esters (C_{16}) [171]

(Maximum Bubble Pressure-A)

Compound	Surface tension (±0.1)					Least squares constants	
	25°	35°	45°	55°	65 °C	a	b
Methyl pentadecanoate	29.38	28.56	27.75	25.93	26.11	31.43	0.08186
Ethyl myristate	29.27	28.26	27.24	26.23	25.21	31.81	0.1015
Propyl tridecanoate	28.84	27.92	27.00	26.08	25.16	31.14	0.0920
Butyl dodecanoate[a]	28.33	27.54	26.76	25.98	25.19	30.29	0.07844
Pentyl undecanoate	28.20	27.37	26.54	25.72	24.89	30.26	0.08256
Hexyl decanoate	28.29	27.36	26.43	25.50	24.57	30.61	0.0929
Heptyl nonanoate	28.14	27.29	26.44	25.59	24.74	30.26	0.08492
Octyl octanoate	29.99	27.12	26.29	25.47	24.65	29.99	0.08222
Nonyl heptanoate	28.24	27.46	26.68	25.90	25.12	30.20	0.0782
Decyl hexanoate	28.59	27.66	26.72	25.79	24.85	30.93	0.09353
Undecyl valerate	28.45	27.64	26.83	26.03	25.22	30.46	0.08057
Dodecyl butyrate	28.89	28.03	27.17	26.31	25.45	31.04	0.0860
Tridecyl propionate	29.43	28.61	27.79	26.96	26.14	31.49	0.0823
Tetradecyl acetate	29.81	28.87	27.93	26.98	26.04	32.16	0.0941
Pentadecyl formate	30.42	29.49	28.56	27.62	26.69	32.76	0.09344

[a] For preferred values for butyl dodecanoate see table 9. The values given here are listed to maintain the consistency of treatment of these isomeric esters.

TABLE 38.2. Esters of cyclopropane- and cyclobutane-carboxylic acids [115]

(Capillary Rise Method-A)

Carboxylate	Surface tension (±0.10)									Least squares constants		σ_γ
	15°	20°	30°	40°	50°	60°	70°	80°	90 °C	a	b	
Methyl cyclopropane-	------	30.79	29.56	28.33	27.09	25.86	24.63	23.40	22.17	33.25	0.1231	±0.08
Ethyl cyclopropane-	------	29.08	27.94	26.79	25.64	24.49	23.34	22.20	21.05	31.38	0.1148	±0.08
Propyl cyclopropane-	------	29.00	27.89	26.78	25.67	24.57	23.46	22.35	21.25	31.21	0.1107	±0.11
Butyl cyclopropane-	------	28.91	27.89	26.87	25.85	24.84	23.82	22.80	21.79	30.94	0.1017	±0.04
Pentyl cyclopropane-	29.63	29.12	28.09	27.07	26.05	25.03	24.01	22.98	21.96	31.16	0.1022	±0.08
Butyl cyclobutane-	29.83	29.35	28.37	27.39	26.41	25.44	24.46	23.48	22.51	31.30	0.0977	±0.07
Pentyl cyclobutane-	29.82	29.34	28.38	27.42	26.46	25.50	24.54	23.58	22.62	31.26	0.0960	±0.11
Methyl cyclobutane-	------	30.79	29.60	28.41	27.21	26.02	24.83	23.64	22.45	33.17	0.1191	±0.18
Propyl cyclobutane-	29.67	29.15	28.10	27.06	26.01	24.97	23.92	22.88	21.83	31.24	0.1045	±0.05

TABLE 38.3. Esters of orthoformic acid [250]

(Capillary Rise Method-A)

Orthoformate	Surface tension (±0.10)								Least squares constants		σ_γ
	15°	25°	35°	45°	55°	65°	75°	85 °C	a	b	
Ethyl	24.09	23.10	22.11	21.12	20.14	19.15	18.16	17.17	25.57	0.0980	±0.11
Propyl	25.25	24.34	23.42	22.50	21.59	20.67	19.75	18.84	26.63	0.0917	±0.04
Butyl	26.05	25.18	24.32	23.45	22.59	21.72	20.85	19.99	27.35	0.0866	±0.09

TABLE 39. Esters of 3 ,3-disubstituted glutaric acids [235]

(Differential Capillary Rise-A)

Compound	Surface tension (±0.10)								Least squares constants		σ_γ
	15°	25°	35°	45°	55°	65°	75°	85 °C	a	b	
Methyl 3-methylglutarate	-------	33.17	32.12	31.06	30.01	28.95	27.90	26.84	35.81	0.1055	±0.04
Methyl 3 ,3-dimethylglutarate	-------	30.93	29.96	28.99	28.02	27.05	26.08	25.11	33.36	0.0971	±0.02
Methyl 3-ethyl-3-methylglutarate	-------	31.54	30.55	29.56	28.57	27.58	26.59	25.60	34.01	0.0989	±0.12
Methyl 3 ,3-diethylglutarate	-------	31.29	30.40	29.51	28.62	27.73	26.84	25.95	33.52	0.0890	±0.00
Methyl 3-methyl-3-propylglutarate	-------	30.74	29.83	28.91	27.99	27.07	26.15	25.24	33.04	0.0918	±0.00
Methyl 3-ethyl-3-propylglutarate	-------	30.93	30.03	29.13	28.23	27.33	26.43	25.53	33.18	0.0900	±0.03
Methyl 3 ,3-dipropylglutarate	-------	30.04	29.15	28.26	27.37	26.48	25.59	24.70	32.27	0.0891	±0.10
Methyl 1 ,1-cyclopentanediacetate	-------	34.85	33.80	32.74	31.68	30.62	29.56	28.51	37.50	0.1058	±0.04
Methyl 3-methyl-1 ,1-cyclopentane-diacetate	-------	32.12	31.25	30.39	29.52	28.66	27.79	26.93	34.28	0.0865	±0.06
Methyl 1 ,1-cyclohexanediacetate	-------	35.31	34.34	33.37	32.40	31.43	30.46	29.49	37.74	0.0971	±0.06
Methyl 3-methyl-1 ,1-cyclohexane-diacetate	-------	32.94	32.10	31.26	30.43	29.59	28.75	27.91	35.04	0.0839	±0.18
Methyl 4-methyl-1 ,1-cyclohexane-diacetate	33.68	32.89	32.10	31.31	30.51	29.72	28.93	28.14	34.87	0.0792	±0.02
Methyl *trans*-decahydro-2 ,2-naphtha-lenediacetate	36.88	35.93	34.97	34.02	33.07	32.12	31.16	30.21	38.31	0.0953	±0.08
Methyl *trans*-hexahydro-2 ,2-indandi-acetate	-------	35.20	34.27	33.39	32.41	31.48	30.55	29.62	37.53	0.0930	±0.03
Ethyl 3 ,3-dimethylglutarate	30.11	29.18	28.25	27.32	26.39	25.46	24.53	23.60	31.51	0.0930	±0.13
Ethyl 1 ,1-cyclopentanediacetate	33.40	32.41	31.42	30.43	29.43	28.44	27.45	26.46	34.89	0.0992	±0.08
Ethyl 3-methyl-1 ,1-cyclopentanedi-acetate	31.55	30.68	29.81	28.94	28.06	27.19	26.32	25.45	32.86	0.0872	±0.01
Ethyl 1 ,1-cyclohexanediacetate	33.93	32.98	32.04	31.10	30.16	29.22	28.27	27.33	35.34	0.0942	±0.04
Ethyl 3-methyl-1 ,1-cyclohexanedi-acetate	-------	31.26	30.33	29.40	28.48	27.55	26.62	25.69	33.58	0.0928	±0.04
Ethyl 4-methyl-1 ,1-cyclohexanedi-acetate	32.18	31.30	30.42	29.54	28.66	27.78	26.90	26.02	33.50	0.0880	±0.03
Ethyl *trans*-hexahydro-2 ,2-indandi-acetate	-------	33.44	32.51	31.59	30.66	29.74	28.81	27.89	35.75	0.0925	±0.09
Ethyl *trans*-decahydro-2 ,2-naphthalene-diacetate	-------	33.92	32.98	32.04	31.09	30.15	29.21	28.27	36.27	0.0941	±0.12

TABLE 40.1 Ethers [242]

(Capillary Rise Method-A)

Compound	Surface tension (±0.10)									Least squares constants		σ_γ
	15°	25°	30°	40°	50°	60°	70°	80°	90 °C	a	b	
Ethyl methyl ether[d]	16.58	15.27	14.61	13.29	11.97	------	------	------	------	18.56	0.1317	±0.04
Ethyl propyl ether[d]	20.34	19.28	18.76	17.70	16.65	15.60	------	------	------	21.92	0.1054	±0.01
Diethyl ether	17.56	16.65	16.20	------	------	------	------	------	------	18.92	0.0908	±0.00
Dipropyl ether	21.03	19.98	19.46	18.41	17.36	16.32	------	------	------	22.60	0.1047	±0.00
Diisopropyl ether	18.32	17.27	16.75	15.70	14.65	13.60	------	------	------	19.89	0.1048	±0.03
Dibutyl ether	23.38	22.44	21.98	21.04	20.11	19.18	18.24	17.31	16.37	24.78	0.0934	±0.08
Dipentyl ether	25.27	24.35	23.88	22.96	22.03	21.11	20.18	19.26	18.22	26.66	0.0925	±0.09
Diisopentyl ether	23.45	22.58	22.15	21.28	20.40	19.53	18.66	17.79	16.92	24.76	0.0871	±0.04
Dihexyl ether	26.21	25.35	24.93	24.07	23.21	22.35	21.50	20.64	19.78	27.50	0.0858	±0.07
Diheptyl ether	27.42	26.56	26.14	25.28	24.43	23.58	22.72	21.87	21.01	28.70	0.0854	±0.03
Dioctyl ether	------	27.31	26.90	26.07	25.24	24.41	23.58	22.75	21.92	29.39	0.0830	±0.04
Butyl methyl ether	20.58	19.53	19.00	17.94	------	------	------	------	------	22.17	0.1057	±0.06
Butyl ethyl ether	21.18	20.13	19.60	18.55	17.50	16.46	------	------	------	22.75	0.1049	±0.02
Methyl pentyl ether	22.43	21.39	20.87	19.83	18.79	17.75	------	------	------	23.99	0.1040	±0.01
Ethyl pentyl ether	22.70	21.71	21.21	20.22	19.23	18.24	17.25	16.25	15.26	24.19	0.0992	±0.18
Hexyl methyl ether	23.71	22.72	22.22	21.23	20.24	19.25	18.26	17.26	16.27	25.20	0.0992	±0.06

Compound	Surface tension (±0.10)										Least squares constants		σ_γ
	15°	20[c]	25°	30°	40[c]	50°	60[c]	70°	80°	90 °C	a	b	
Ethyl hexyl ether	22.46	------	21.70	21.33	20.57	19.82	19.07	18.31	17.56	16.80	23.59	0.0754	±0.40
Bis(2-ethoxyethyl) ether	27.98	------	26.80	26.21	25.04	23.86	22.68	21.51	20.33	19.16	29.74	0.1176	±0.35
Bis[2-(2-methoxyethoxy)-ethyl] ether	34.42	------	33.41	32.90	31.88	30.86	29.85	28.83	27.81	26.80	35.95	0.1017	±0.02
Anisole	36.30	------	35.10	34.50	33.29	32.09	30.89	29.68	28.48	27.27	38.11	0.1204	±0.13
Phenetole	34.51	------	32.41	31.86	30.75	29.65	28.55	27.44	26.34	25.23	35.17	0.1104	±0.12
Phenyl propyl ether	32.69	------	31.63	31.10	30.05	28.99	27.93	26.88	25.82	24.77	34.27	0.1056	±0.03
Isopropyl phenyl ether	31.34	------	30.28	29.76	28.70	27.65	26.60	25.54	24.49	23.43	32.92	0.1054	±0.07
Butyl phenyl ether	31.93	------	30.97	30.48	29.52	28.55	27.59	26.62	25.66	24.69	33.38	0.09653	±0.07
Pentyl phenyl ether	32.19	------	31.25	30.78	29.85	28.91	27.98	27.04	26.11	25.17	33.59	0.0935	±0.01
Hexyl phenyl ether	31.66	------	30.79	30.35	29.48	28.61	27.73	26.86	25.99	25.12	32.97	0.08725	±0.05
Allyl phenyl ether	34.44	------	33.35	32.80	31.71	30.61	29.51	28.43	27.34	26.24	36.08	0.1093	±0.03
p-Methylanisole[b]	34.59	------	33.52	32.99	31.92	30.84	29.77	28.70	27.63	26.56	36.20	0.1071	------
Phenyl ether[c]	27.53	------	26.77	26.36	25.58	24.80	24.02	23.24	------	------	28.70	0.0780	------
Anethol[a]	35.59	35.14	34.69	34.24	33.35	32.45	31.56	30.66	29.77	28.87	36.93	0.0895	±0.30

[a] Ref. [13] (Capillary Rise Method-V) (±1.5).
[b] Ref. [192] (±0.2).
[c] Ref. [43] (Maximum Bubble Pressure-A) (±0.2).
[d] Ref. [179] (Capillary Rise Method-A) (±0.5).

TABLE 40.2. Oximes [251]

(Maximum Bubble Pressure Method-A)

Oxime	Surface tension (±0.15)										Least squares constants		σ_γ
	15°	20°	25°	30°	40°	50°	60°	70°	80°	90 °C	a	b	
Acetone *O*-methyloxime	23.38	22.85	22.31	21.78	20.72						24.97	0.1062	±0.00
Acetone *O*-ethyloxime	23.03	22.48	21.93	21.38	20.28	19.18	18.08				24.68	0.1100	±0.01
Acetone *O*-propyloxime	24.19	23.65	23.12	22.59	21.52	20.45	19.38				25.79	0.1068	±0.03
2-Butanone *O*-ethyloxime	24.29	23.75	23.20	22.66	21.58	20.49	19.40	18.32	17.23	16.15	25.92	0.1086	±0.06
2-Butanone *O*-propyloxime	24.47	23.95	23.43	22.93	21.88	20.84	19.81	18.77	17.74	16.70	26.02	0.1035	±0.04
3-Pentanone *O*-ethyloxime	24.28	23.78	23.27	22.77	21.76	20.75	19.75	18.74	17.73	16.73	25.79	0.1007	±0.08
3-Pentanone *O*-propyloxime	25.23	24.73	24.24	23.74	22.75	21.76	20.77	19.78	18.79	17.80	26.71	0.09899	±0.05
2-Pentanone *O*-ethyloxime	24.04	23.56	23.08	22.59	21.63	20.66	19.70	18.73	17.77	16.80	25.49	0.0965	±0.06
2-Pentanone *O*-propyloxime	25.13	24.63	24.13	23.64	22.64	21.64	20.64	19.64	18.65	17.65	26.63	0.0998	±0.14
3-Hexanone *O*-ethyloxime	24.74	24.25	23.76	23.28	22.30	21.32	20.34	19.36	18.39	17.41	26.21	0.0978	±0.04
3-Hexanone *O*-propyloxime	25.49	25.00	24.50	23.98	23.01	22.02	21.03	20.04	19.05	18.05	26.98	0.09918	±0.09
4-Heptanone *O*-ethyloxime	25.26	24.76	24.25	23.75	22.74	21.73	20.73	19.72	18.71	17.71	26.77	0.1007	±0.13
4-Heptanone *O*-propyloxime		24.96	24.50	24.04	23.13	22.21	21.30	20.38	19.47	18.55	26.79	0.0915	±0.12

TABLE 41. Ethylenic compounds [114]

(Capillary Rise-A)

Compound	Surface tension (±0.10)									Least squares constants		σ_γ
	15°	20°	30°	40°	50°	60°	70°	80°	90 °C	a	b	
3-Butenoic acid	29.31	28.82	27.83	26.84	25.84	24.85	23.86	22.87	21.88	30.80	0.0991	±0.07
Methyl 3-butenoate	27.98	27.38	26.18	24.99	23.79	22.60				29.77	0.1195	±0.05
Ethyl 3-butenoate	96.71	96.16	95.05	93.95	92.84	91.73	20.63	19.52	18.42	28.37	0.1106	±0.05
Propyl 3-butenoate	26.81	26.29	25.25	24.22	23.18	22.14	21.11	20.07	19.04	28.36	0.1036	±0.03
Butyl 3-butenoate	27.07	26.58	25.59	24.61	23.62	22.63	21.65	20.66	19.68	28.55	0.0986	±0.03
Pentyl 3-butenoate	27.26	26.78	25.84	24.89	23.94	22.99	22.04	21.10	20.15	28.68	0.0948	±0.03
Methyl undecenoate	30.42	29.95	29.01	28.07	27.13	26.19	25.25	24.31	23.37	31.83	0.0940	±0.04
Ethyl undecenoate	29.69	29.24	28.34	27.45	26.55	25.65	24.76	23.86	22.97	31.03	0.0896	±0.04
Propyl undecenoate	29.95	29.49	28.57	27.64	26.72	25.80	24.87	23.95	23.02	31.34	0.0924	±0.03
Butyl undecenoate	30.05	29.61	28.74	27.86	26.98	26.10	25.22	24.35	23.47	31.37	0.0878	±0.07
2-Pentene	17.66	17.14	16.09							19.23	0.1047	±0.00
Methyl allylmalonate	33.11	32.57	31.49	30.40	29.32	28.24	27.15	26.07	24.98	34.74	0.1084	±0.06
Ethyl allylmalonate	30.15	29.65	28.65	27.65	26.64	25.64	24.64	23.64	22.64	31.65	0.1001	±0.10
Propyl allylmalonate		29.29	28.36	27.44	26.51	25.58	24.66	23.73	22.81	31.14	0.0926	±0.12
Butyl allylmalonate	29.42	28.98	28.10	27.22	26.33	25.45	24.57	23.69	22.81	30.74	0.0881	±0.07
Allyl acetate		26.36	25.17	23.99	22.80	21.61				28.73	0.1186	±0.08

TABLE 41. Ethylenic compounds [114]—Continued

Compound	Surface tension (±0.10)									Least squares constants		σ_γ
	15°	20°	30°	40°	50°	60°	70°	80°	90 °C	a	b	
Allyl propionate	26.91	26.35	25.23	24.12	23.00	21.88	20.77	19.65	18.54	28.58	0.1116	±0.04
Allyl butyrate	26.65	26.13	25.09	24.05	23.01	21.98	20.94	19.90	18.86	28.21	0.1039	±0.02
Allyl succinate	------	33.70	32.65	31.60	30.55	29.51	28.46	27.41	26.37	35.79	0.1047	±0.06
3-Chloropropene	24.08	23.61	22.66	------	------	------	------	------	------	25.50	0.0946	±0.06
3-Bromopropene	27.56	26.94	25.68	24.42	23.16	21.91	------	------	------	29.45	0.1257	±0.03
1,5-Hexadiene	19.39	18.87	17.85	16.82	15.79	------	------	------	------	20.93	0.1028	±0.07
Dimethyl maleate	38.90	38.29	37.07	35.85	34.63	33.41	32.19	30.97	29.75	40.73	0.1220	±0.02
Propyl fumarate	31.49	31.01	30.05	29.09	28.12	27.16	26.20	25.24	24.28	32.93	0.0961	±0.09
Diethyl maleate	33.11	32.59	31.55	30.51	29.47	28.44	27.40	26.36	25.32	34.67	0.1039	±0.12
Dipropyl maleate	32.46	31.96	30.96	29.96	28.96	27.96	26.96	25.96	24.96	33.96	0.1000	±0.13
Dibutyl maleate	------	30.73	29.86	29.00	28.13	27.27	26.40	25.54	24.67	32.46	0.0865	±0.13
Diisobutyl maleate	------	28.79	27.94	27.08	26.23	25.38	24.52	23.67	22.81	30.50	0.0854	±0.03
Dipentyl maleate	31.24	30.81	29.95	29.09	28.22	27.36	26.50	25.64	25.08	32.53	0.0861	±0.02
Diisopentyl maleate	28.97	28.60	27.86	27.11	26.37	25.63	24.88	24.14	23.39	30.09	0.0744	±0.09
Ethyl fumarate	32.32	31.79	30.73	29.68	28.62	27.56	26.51	25.45	24.40	33.90	0.1056	±0.11
Butyl fumarate	31.15	30.71	29.82	28.92	28.03	27.14	26.25	25.36	24.47	32.49	0.08916	±0.07
Isobutyl fumarate	------	28.93	28.07	27.22	26.36	25.51	24.65	23.80	22.94	30.64	0.0855	±0.07
Pentyl fumarate	31.11	30.69	29.84	28.99	28.14	27.30	26.45	25.60	24.76	32.38	0.0847	±0.04
Isopentyl fumarate	------	29.33	28.51	27.69	26.87	26.05	25.23	24.41	23.59	30.97	0.0820	±0.06
Methyl citraconate	------	36.34	35.13	33.93	32.72	31.51	30.31	29.10	27.90	38.75	0.1206	±0.08
Ethyl citraconate	------	32.15	31.14	30.13	29.12	28.12	27.11	26.10	25.09	34.17	0.1009	±0.05
Propyl citraconate	------	31.08	30.13	29.18	28.22	27.27	26.32	25.37	24.42	32.98	0.0951	±0.13
Methyl mesaconate	35.86	35.27	34.08	32.90	31.72	30.54	29.36	28.17	26.99	37.63	0.1182	±0.13
Ethyl mesaconate	------	31.54	30.52	29.50	28.48	27.47	26.45	25.43	24.42	33.57	0.1017	±0.13
Propyl mesaconate	31.39	30.91	29.97	29.02	28.07	27.12	26.17	25.23	24.28	32.81	0.0948	±0.05
Methyl pyrotartrate	------	33.21	32.11	31.01	29.90	28.80	27.70	26.60	25.49	35.42	0.1103	±0.08
Ethyl pyrotartrate	------	29.80	28.82	27.85	26.87	25.89	24.92	23.94	22.97	31.75	0.0976	±0.02
Propyl pyrotartrate	------	29.55	28.63	27.71	26.78	25.86	24.94	24.02	23.10	31.39	0.0921	±0.06
Diethyl (bromomethyl)-malonate [c]	31.20	30.77	29.91	29.05	28.18	27.32	26.45	25.59	24.73	32.50	0.08636	±0.08
Methyl crotonate	------	28.62	27.43	26.25	25.07	23.89	22.71	21.52	20.34	30.98	0.1182	±0.08
Ethyl crotonate	------	27.18	26.11	25.05	23.98	22.91	21.85	20.78	19.72	29.31	0.1066	±0.05
Propyl crotonate	28.36	27.83	26.78	25.72	24.67	23.62	22.56	21.51	20.45	29.94	0.1054	±0.06
Butyl crotonate	28.32	27.84	26.88	25.92	24.96	24.01	23.05	22.09	21.13	29.76	0.0959	±0.07
Pentyl crotonate	28.74	28.27	27.32	26.37	25.42	24.47	23.52	22.57	21.62	30.17	0.09505	±0.07
Isopentyl crotonate	------	27.25	26.31	25.38	24.44	23.51	22.57	21.64	20.70	29.12	0.0935	±0.09
Methyl cinnamate [a]	------	------	------	37.65	36.61	35.58	34.55	33.52	32.49	41.77	0.1031	±0.19
Ethyl cinnamate	------	37.90	36.85	35.81	34.76	33.72	32.67	31.63	30.58	39.99	0.1045	±0.07
Propyl cinnamate	------	36.59	35.62	34.65	33.68	32.71	31.74	30.77	29.80	38.53	0.0970	±0.07
Butyl cinnamate	------	35.75	34.81	33.87	32.93	31.99	31.05	30.11	29.17	37.63	0.0940	±0.10
Dimethyl chlorofumarate [b]	------	37.52	36.35	35.19	34.02	32.85	31.69	30.52	29.36	39.85	0.1166	±0.07
Diethyl chlorofumarate [b]	33.76	33.20	32.09	30.98	29.87	28.77	------	------	------	35.42	0.1109	±0.02
Dipentyl chlorofumarate [b]	------	------	29.00	28.20	27.39	26.59	25.78	24.98	24.17	31.42	0.0805	±0.02
Methyl *cis*-cinnamate [a]	------	40.17	38.92	37.66	36.41	35.16	33.90	32.65	------	42.68	0.1254	±0.02
Methyl α-bromocinnamate [a]	------	45.63	44.36	43.09	41.82	40.56	39.29	38.02	36.75	48.17	0.1269	±0.06
Methyl β-bromocinnamate [a]	------	44.36	43.17	41.98	40.79	39.61	38.42	37.23	------	46.74	0.1189	±0.40
Methyl α-bromo-*cis*-cinnamate [a]	------	43.48	42.28	41.09	39.89	38.69	37.50	36.52	------	45.87	0.1196	±0.07
Methyl β-bromo-*cis*-cinnamate [a]	------	------	------	------	------	36.62	35.45	34.27	33.10	43.68	0.1176	±0.09
Propyl hydrocinnamate [b]	34.87	34.37	33.35	32.34	31.33	30.32	29.31	28.29	------	36.39	0.1012	±0.05
Isopropyl hydrocinnamate [b]	33.57	33.09	32.12	31.15	30.18	29.21	28.24	27.27	26.30	35.03	0.0970	±0.02
Dimethyl chloromaleate [b]	38.14	37.54	36.35	35.15	33.95	32.75	31.55	30.36	29.16	39.94	0.1198	±0.06
3-Iodopropene [d]	32.38	31.75	30.48	29.22	27.96	26.70	25.44	24.17	22.91	34.27	0.1262	±0.60
Isopentyl hydrocinnamate [b]	32.19	31.75	30.88	30.01	29.14	28.26	27.39	26.52	25.64	33.50	0.08728	±0.03

[a] Ref. [216] (Maximum Bubble Pressure-A) (±0.5).
[b] Ref. [255] (Capillary Rise Method-A) (±0.3).
[c] Ref. [108] (Maximum Bubble Pressure-N_2) (±2.0).
[d] Ref. [192] (Capillary Rise Method-A) (±0.7).

TABLE 42.1. Halogenated hydrocarbons

Tetrachlorodifluoroethane [97]

(Capillary Rise Method-A)

Surface tension (±0.09)						Least squares constants	
30.0°	40.0°	50.0°	60.0°	70.0°	80.0 °C	a	b
22.73	21.60	20.46	19.33	18.20	17.07	26.13	0.1133

Trichlorotrifluoroethane [97]

(Capillary Rise Method-A)

Surface tension ($\gamma = 19.85 - 0.9345t + 0.1448t^2 - 0.0045t^3 - 0.1448t^4$)

0°	10°	20°	30°	40 °C
19.85	18.96	17.75	16.56	15.30

Perfluoropentanes [186]

(Capillary Rise Method-A)

Compound	Surface tension (±0.10)					Least squares constants	
	5°	10°	15°	20°	25 °C	a	b
Perfluoropentane	11.28	10.82	10.35	9.89	9.42	11.75	0.0932
Perfluoro-2-methylbutane	11.88	11.41	10.94	10.48	10.01	12.35	0.0937
Perfluorocyclopentane	.....	12.04	11.58	11.12	.....	12.97	0.0927

Perfluorohexane [211]

(Capillary Rise Method)

Surface tension (±0.18)								Least squares constants	
10°	15°	20°	25°	30°	35°	40°	50 °C	a	b
12.84	12.38	11.91	11.44	10.97	10.51	10.04	9.10	13.78	0.0935

TABLE 42.1. Halogenated hydrocarbons—Continued

Perfluoro-2-methylpentane [211]

(Capillary Rise Method)

Surface tension (±0.18)								Least squares constants	
10°	15°	20°	25°	30°	35°	40°	50 °C	*a*	*b*
12.88	12.50	12.12	11.73	11.35	10.97	10.58	9.81	13.65	0.0767

Hexadecafluoroheptane [161]

(Maximum Bubble Pressure-A)

Surface tension (±0.10)					Least squares constants	
15°	20°	25°	30°	35 °C	*a*	*b*
13.60	13.19	12.78	12.37	11.96	14.83	0.0820

Perfluoromethylcyclohexane [78]

(Maximum Bubble Pressure-A)

Surface tension (±0.15)						Least squares constants	
0°	10°	20°	30°	40°	50 °C	*a*	*b*
17.70	16.65	15.70	14.70	13.80	12.90	17.69	0.0973

Fluorotrinitromethane [267]

(Maximum Bubble Pressure Method-A)

Surface tension (±0.1)						Least squares constants	
10°	15°	20°	30°	40°	50 °C	*a*	*b*
26.37	25.76	25.15	23.93	22.71	21.49	27.59	0.1219

TABLE 42.2. Halogen fluorides [185]

(Capillary Rise Method-V)

Compound	Surface tension (±0.6)							Least squares constants	
	10°	15°	20°	25°	35°	40°	45 °C	a	b
Iodine pentafluoride	-------	32.0	30.5	29.9	28.6	27.9	-------	33.16	0.1318
Bromine pentafluoride	24.1	23.6	23.0	22.5	21.4	-------	-------	25.24	0.1098
Bromine trifluoride	37.3	36.8	36.3	35.8	34.8	34.3	33.8	38.30	0.0999

Chlorine trifluoride [10]

(Capillary Rise Method-V)

Surface tension (orthobaric) (±0.2)										Least squares constants	
5°	10°	15°	20°	25°	30°	35°	40°	45°	50 °C	a	b
26.1	25.2	24.4	23.6	22.7	21.9	21.1	20.3	19.4	18.6	26.9	0.1660

TABLE 42.3. Antimony pentafluoride [102]

(Maximum Bubble Pressure Method-A)

Surface tension (±0.30)											Least squares constants	
5°	10°	15°	20°	30°	40°	60°	80°	100°	120°	140 °C	a	b
48.1	47.1	46.2	45.2	43.3	41.3	37.5	33.6	29.7	25.8	22.0	49.07	0.1937

TABLE 42.4. Selenium tetrafluoride [166]

(Maximum Bubble Pressure-A)

Surface tension (±0.18)										Least squares constants	
5°	10°	20°	30°	40°	50°	60°	70°	80°	90 °C	a	b
37.97	37.34	36.07	34.79	33.51	32.24	30.97	29.69	28.42	27.14	38.61	0.1274

TABLE 42.5. Uranium hexafluoride [135]

(Capillary Rise Method-V)

Surface tension (±0.2)				Least squares constants	
70°	80°	90°	100 °C	a	b
16.8	15.6	14.3	13.1	25.5	0.1240

TABLE 43. Gallium trichloride and addition compounds

(Differential Capillary Rise-V)

Compound	Surface tension (±0.2)										Least squares constants		σ_γ
	70°	80°	90°	100°	110°	120°	130°	140°	150°	160 °C	a	b	
Gallium trichloride[a]	28.0	27.0	26.0	25.0	24.0	23.0	22.0	21.0	------	------	35.0	0.1000	±0.3
Gallium trichloride—pyridine[b]	------	------	------	------	------	38.7	37.7	36.8	35.7	34.8	50.3	0.0970	±0.3
Gallium trichloride—piperidine[c]	------	------	------	------	------	35.3	34.5	33.6	32.8	32.3	45.5	0.0847	±0.5
Gallium trichloride—dipiperidine[c]	------	------	------	------	------	------	24.3	22.6	21.0	19.3	46.0	0.1670	±0.2
Gallium trichloride—phosphonyl chloride[d]	------	------	------	------	32.7	32.0	31.2	30.5	29.7	------	41.1	0.0760	±0.1

[a] Ref. [75].
[b] Ref. [76].
[c] Ref. [74].
[d] Ref. [73].

TABLE 44.1. Ditertiary glycols [120]

(Max. Bubble Pressure-A)

Glycol	Surface tension (±0.15)					Least squares constants	
	60°	65°	70°	75°	80 °C	a	b
3,6-Diethyl-3,6-octanediol	------	------	27.13	26.68	26.23	33.43	0.0900
3,11-Diethyl-3,11-tridecanediol	------	29.63	29.27	28.91	28.55	34.31	0.0720
2,11-Dimethyl-2,11-dodecanediol	------	29.79	29.39	28.99	28.59	34.99	0.0800
3,12-Diethyl-3,12-tetradecanediol	------	30.04	29.64	29.23	28.83	35.31	0.0810
4,13-Dipropyl-4,13-hexadecanediol	28.32	27.97	27.62	27.09	26.92	32.51	0.06987

TABLE 44.2. Polyethylene glycols and derivatives [68]

(Capillary Rise Method-V)

Compound	Surface tension (±0.14)							Least squares constants	
	20°	40°	60°	80°	100°	120°	140 °C	a	b
Ethylene glycol	48.43	46.65	44.87	43.09	41.31	39.53	37.75	50.21	0.0890
Diethylene glycol	45.21	43.45	41.69	39.93	38.17	36.41	34.65	46.97	0.0880
Triethylene glycol	45.57	43.81	42.05	40.29	38.53	36.77	35.01	47.33	0.0880
Heptaethylene glycol	48.39	46.61	44.83	43.05	41.27	39.49	37.71	50.17	0.0890
1,3-Propanediol	45.62	43.82	42.01	40.21	38.40	36.59	34.79	47.43	0.0903
2-(2-Chloroethoxy)ethyl-2-(2-hydroxyethoxy)ethyl ether	43.62	41.77	39.92	38.07	36.22	34.37	32.52	45.47	0.0925
Bis(2-chloroethyl) ether	37.96	35.35	32.73	30.12	27.51	.....	.....	40.57	0.1306
p-Dioxane	33.45	30.67	27.88	25.10	22.32	.....	.....	36.23	0.1391
Bis(2-methoxyethyl) ether	30.14	27.81	25.49	23.16	20.83	.....	.....	32.47	0.1164

TABLE 44.3. Epichlorohydrin [220]

(Maximum Bubble Pressure-A)

Surface tension (±0.30)							Least squares constants		σ_γ
10°	20°	30°	40°	60°	80°	100 °C	a	b	
38.40	36.04	35.68	34.32	31.60	28.88	26.16	39.76	0.1360	±0.06

TABLE 45. Synthetic glycerides

Ester of glycerol	Surface tension										Least squares constants		σ_γ
	20°	40°	60°	80°	100°	110°	120°	130°	140°	150 °C	a	b	
Glycerol triformate[a]	47.41	45.27	43.12	40.98	38.84	37.77	36.70	35.63	34.56	33.48	49.55	0.1071	±0.13
Glycerol acetate[d]	41.78	40.04	38.28	36.52	34.77	33.90					43.53	0.08757	±0.05
Glycerol triacetate[a]	36.26	34.64	33.02	31.40	29.78	28.97	28.16	27.35	26.54	25.73	37.88	0.081	±0.38
Glycerol tributyrate[a]	30.85	29.49	28.14	26.78	25.42	24.74	24.06	23.38	22.70	22.02	32.21	0.0679	±0.14
Glycerol trihexanoate[a]	29.93	28.79	27.64	26.50	25.36	24.79	24.22	23.65	23.08	22.50	31.07	0.0571	±0.05
Glycerol trioctanoate[a]	29.21	28.17	27.13	26.08	25.04	24.52	24.00	23.48	22.96	22.44	30.25	0.05208	±0.02
Glycerol tridecanoate[a]		27.64	26.54	25.45	24.36	23.81	23.27	22.72	22.18	21.63	29.82	0.0546	±0.18
Glycerol trilaurate[a]			29.36	28.26	27.17	26.62	26.08	25.53	24.98	24.44	32.64	0.05469	±0.06
Glycerol 1-palmitate[c]				22.12	20.78	20.11	19.45	18.78	18.11		27.46	0.06678	±0.15
Glycerol tripalmitate[b]				26.88	25.54	24.87	24.20	23.52			32.26	0.0672	±0.03
Glycerol 1-stearate[c]					18.64	18.06	17.47	16.88	16.29		24.52	0.05876	±0.15
Glycerol tristearate[b]			28.62	27.25	25.88	25.19	24.51	23.82			32.73	0.06854	±0.05
Glycerol trioleate[a]	34.63	33.23	31.84	30.44	29.04	28.34	27.64	26.94	26.24	25.54	36.03	0.0699	±0.15
Glycerol trielaidate[c]			22.98	21.58	20.18	19.50	18.80	18.10			27.18	0.06986	±0.15
Glycerol trilinoleate[c]	20.28	19.70	19.13	18.56	17.99	17.70	17.41	17.12			20.85	0.02867	±0.15
Glycerol 1,2-diacetate 3-oleate[c]	21.88	20.82	19.75	18.69	17.62	17.09	16.55	16.02			22.95	0.0533	±0.15
Glycerol 1,2-diacetate 3-stearate[c]			26.40	24.53	22.66	21.73	20.79	19.86			32.00	0.09338	±0.15
Glycerol 1,3-dipalmitate[c]				22.15	21.23	20.76	20.30	19.84	19.37		25.85	0.04625	±0.15
Glycerol 1,3-dioleate 2-palmitate[c]	26.49	25.60	24.72	23.83	22.94	22.49	22.05	21.61	21.16		27.38	0.04442	±0.15
Glycerol trinonanoate[c]	24.25	23.12	21.99	20.86	19.73	19.16	18.70	18.03	17.47		25.38	0.0565	±0.15

[a] Ref. [108] (Maximum Bubble Pressure-N_2) (±2.0).
[b] Ref. [254] (Capillary Rise Method-A) (±0.30).
[c] Ref. [11] (Capillary Pressure-A) (±0.15).
[d] Ref. [255] (Capillary Rise Method-A) (±0.20).

TABLE 46. Glycerol trinitrate [222]

(Capillary Rise-A)

Surface tension (±0.2)						Least squares constants	
10°	15°	20°	25°	30°	35 °C	a	b
53.24	51.98	50.73	49.48	48.23	46.98	55.74	0.2504

TABLE 47. Halogen compounds of benzene and homologs

Compound	Surface tension																Least squares constants		σ_γ
	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°	110°	120°	130°	140°	150°	160 °C	a	b	
Fluorobenzene[a]	28.47	27.26	26.06	24.85	23.65	22.45	21.24	20.04									29.67	0.1204	±0.03
Chlorobenzene[c]	34.78	33.59	32.40	31.21	30.01	28.82	27.63	26.44	25.25	24.06	22.87	21.68	20.49				35.97	0.1191	±0.20
Bromobenzene[c]	36.98	35.82	34.66	33.50	32.34	31.18	30.02	28.86	27.70	26.54	25.38	24.22	23.06	21.90	20.74		38.14	0.1160	±0.05
Iodobenzene[a]	40.40	39.27	38.15	37.03	35.90	34.78	33.66	32.54	31.41	30.29	29.17	28.04	26.92	25.80	24.67	23.55	41.52	0.1123	±0.17
p-Fluorotoluene[a]	29.33	28.22	27.11	26.00	24.89	23.75	22.68	21.57	20.46	19.35	18.24						30.44	0.1109	±0.07
m-Fluorotoluene[b]	31.05	29.80	28.54	27.28	26.02	24.77	23.51	22.25	21.00	19.74	18.48						32.31	0.1257	±0.10
p-Chlorotoluene[a]	33.85	32.77	31.68	30.60	29.52	28.44	27.36	26.27	25.19	24.11	23.03	21.95	20.86	19.78	18.70	17.62	34.93	0.1082	±0.10
o-Bromotoluene[b]	35.63	34.63	33.63	32.63	31.63	30.63	29.63	28.64	27.64	26.64	25.64	24.65	23.55	22.65	21.65	20.65	36.62	0.09979	±0.15
p-Bromotoluene[c]			33.41	32.41	31.41	30.42	29.42	28.42	27.43	26.43	25.43	24.44	23.44	22.44	21.44	20.45	36.40	0.0997	±0.14
p-Iodotoluene[c]					34.40	33.44	32.47	31.51	30.54	29.58	28.61	27.65	26.58	25.71	24.75	23.78	39.23	0.09654	±0.18
m-Dichlorobenzene[a]	37.15	36.01	34.86	33.71	32.56	31.42	30.27	29.12	27.98	26.83	25.68	24.54	23.39	22.24	21.09	19.95	38.30	0.1147	±0.10
p-Dichlorobenzene[b]					30.26	29.39	28.51	27.63	26.75	25.87	24.99	24.11	23.23	22.35	21.47	20.60	34.66	0.0879	±0.05
p-Dibromobenzene[b]									32.78	31.77	30.76	29.76	28.75	27.74	26.73	25.73	41.84	0.1007	±0.20
1-Bromo-4-fluoro-benzene[b]	35.71	34.68	33.64	32.61	31.57	30.53	29.50	28.46	27.43	26.39	25.35	24.32	23.28	22.25			36.75	0.1036	±0.13
1-Bromo-4-chloro-benzene[d]							33.02	32.01	31.01	30.01	29.01	28.01	27.00	26.00	25.00	24.00	40.03	0.1002	±0.08
1-Chloro-4-iodo-benzene[e]						37.71	36.69	35.66	34.64	33.62	32.60	31.58	30.55	29.53	28.51	27.49	43.84	0.1022	±0.11
α,α,-Dichloro-toluene[d]	40.22	39.19	38.15	37.12	36.08	35.05	34.01	32.98	31.94	30.91	29.87	28.84	27.80	26.77	25.73	24.70	41.26	0.1035	±0.80
α-Chlorotoluene[d]	38.69	37.47	36.24	35.01	33.78	32.56	31.33	30.10	28.88	27.65	26.42	25.20	23.97	22.74	21.51	20.29	39.92	0.1227	±0.09
α-Bromotoluene[e]	33.66	32.33	30.99	29.66	28.33	27.00	25.67	24.33	23.00	21.67	20.34	19.01	17.67	16.34	15.01	13.68	34.99	0.1332	
Benzoyl chloride[d]	40.26	39.17	38.09	37.00	35.92	34.84	33.75	32.67	31.58	30.50	29.42	28.33	27.25	26.16	25.08	24.00	41.34	0.1084	±0.80
Benzoyl bromide[e]	44.45	43.06	41.66	40.26	38.86	37.47	36.07	34.67	33.28	31.88	30.48	29.09	27.69	26.29	24.89	23.50	45.85	0.1397	
o-Chloroaniline[b]	41.59	40.73	39.86	38.99	38.13	37.26	36.39	35.53	34.66	33.79	32.93	32.06	31.19	30.33	29.46	28.59	42.46	0.08667	±0.50
p-Chloroaniline[a]							40.93	39.85	38.78	37.71	36.64	35.57	34.49	33.42	32.35	31.28	48.43	0.1072	±0.03
(2-Bromoethyl)-benzene[a]	40.02	38.92	37.82	36.72	35.62	34.52	33.42	32.32	31.22	31.12	29.02	27.92	26.82	25.72	24.62	23.52	41.12	0.1100	±0.06
(2-Iodoethyl)-benzene[a]	41.77	40.71	39.64	38.57	37.50	36.44	35.37	34.30	33.24	32.17	31.10	30.04	28.97	27.90	26.83	25.77	42.84	0.1067	±0.17
Benzenesulfonyl fluoride[a]		37.64	36.56	35.48	34.39	33.31	32.23	31.15	30.06	28.98	27.90	26.81	25.73				39.81	0.1083	±0.08
Benzenesulfonyl chloride[a]		43.25	42.13	41.01	39.89	38.78	37.66	36.54	35.43	34.31	33.19	32.08	30.96	29.84			45.48	0.1117	±0.06
p-Toluenesulfonyl chloride[e]							36.09	35.19	34.28	33.38	32.48	31.57	30.67				42.41	0.0903	±0.03
(Bromomethyl)tetra-hydrofuran[a]	38.27	37.11	35.94	34.78	33.61	32.45											39.44	0.1165	±0.03

[a] Ref. [244] (Capillary Rise-A) (±0.10).
[b] Ref. [108] (Maximum Bubble Pressure-N_2) (±2.0).
[c] Ref. [215] (Maximum Bubble Pressure-A) (±1.0).
[d] Ref. [45] (Capillary Rise-A) (±1.0).
[e] Ref. [115] (Capillary Rise-A) (±0.90).
[f] Ref. [26] (Maximum Bubble Pressure-A) (±0.2).

TABLE 48.1. Fluoroacetic acid [111]

(Capillary Rise Method-V)

Surface tension (±0.05)							Least squares constants	
36°	40°	50°	60°	70°	80°	95 °C	a	b
38.21	37.76	36.65	35.54	34.43	33.32	31.64	42.22	0.11145

TABLE 48.2. Trifluoroacetic acid [113]

(Capillary Rise Method-V)

Surface tension (±0.05)												Least squares constants	
24°	26°	28°	30°	35°	40°	45°	50°	55°	60°	65°	68 °C	a	b
13.63	13.44	13.28	13.11	12.68	12.25	11.83	11.42	10.99	10.57	10.15	9.90	15.64	0.08444

TABLE 48.3. Bromoacetic acid [109]

(Capillary Rise Method-V)

Surface tension (±0.06)							Least squares constants	
55°	70°	85°	100°	120°	145°	170 °C	a	b
40.30	38.57	36.96	35.13	33.14	30.40	27.72	46.21	0.1090

TABLE 48.4. Iodoacetic acid [109]

(Capillary Rise Method-V)

Surface tension (±0.06)							Least squares constants	
85°	90°	95°	100°	110°	120°	130 °C	a	b
38.63	38.03	37.35	36.85	35.87	34.54	34.41	48.36	0.1148

TABLE 48.5. Chloroacetic acid [121]

(Capillary Rise Method-A)

Surface tension (±0.1)									Least squares constants	
40°	45°	50°	55°	60°	65°	70°	75°	80 °C	*a*	*b*
38.80	38.24	37.68	37.13	36.57	36.02	35.45	34.89	34.33	43.27	0.1117

TABLE 48.6. Dichloroacetic acid [108]

(Maximum Bubble Pressure Method-N_2)

Surface tension (±2.0)									Least squares constants	
20°	30°	40°	50°	60°	70°	80°	90°	100 °C	*a*	*b*
35.9	35.0	34.1	33.1	32.2	31.3	30.4	29.4	28.5	37.8	0.09272

TABLE 48.7. Trichloroacetic acid [108]

(Maximum Bubble Pressure Method-N_2)

Surface tension (±2.0)								Least squares constants	
80°	90°	100°	120°	140°	160°	180°	200 °C	*a*	*b*
28.2	27.3	26.4	24.7	22.9	21.1	19.3	17.5	35.4	0.0895

TABLE 49. Hexyl alcohols

(Capillary Rise Method-V)

Compound	Surface tension (±0.1)											Least squares constants		σ_γ
	15°	25°	35°	45°	55°	65°	75°	85°	95°	105°	115 °C	a	b	
2-Methyl-1-pentanol[b]	25.75	24.93	24.11	23.29	22.48	21.66	20.84	20.02	19.20	18.38	17.56	26.98	0.0819	±0.07
2-Methyl-2-pentanol[a]	23.78	22.92	22.06	21.20	20.24	19.48	18.62	17.75	16.89	16.02	15.17	25.07	0.08606	±0.08
2-Methyl-3-pentanol[d]	25.06	24.14	23.23	22.32	21.40	20.49	19.57	18.66	17.75	16.83	15.92	26.43	0.0914	±0.14
4-Methyl-2-pentanol[b]	23.44	22.62	21.80	20.98	20.15	19.33	18.51	17.69	16.87	16.05	15.23	24.67	0.0821	±0.04
4-Methyl-1-pentanol[e]	24.81	24.07	23.32	22.58	21.84	21.10	20.35	19.61	18.87	18.12	17.38	25.93	0.07434	±0.14
3-Methyl-1-pentanol[e]	25.74	24.95	24.16	23.37	22.58	21.79	21.00	20.21	19.42	18.63	17.04	26.92	0.07894	±0.20
3-Methyl-2-pentanol[e]	25.76	24.84	23.92	23.00	22.09	21.17	20.25	19.33	18.41	17.49	16.57	27.14	0.0919	±0.13
3-Methyl-3-pentanol[d]	24.15	23.26	22.37	21.48	20.60	19.71	18.82	17.93	17.04	16.16	15.27	25.48	0.0888	±0.24
2,3-Dimethyl-2-butanol[e]	24.73	23.74	22.75	21.76	20.76	19.77	18.78	17.79	16.80	15.80	14.81	26.22	0.0992	±0.15
Hexyl alcohol[b]	26.61	25.81	25.01	24.21	23.40	22.60	21.80	21.00	20.20	19.40	18.60	27.81	0.0801	±0.07
2-Hexanol[b]	25.14	24.27	23.40	22.53	21.66	20.79	19.92	19.05	18.18	17.32	16.45	26.44	0.0869	±0.07
3-Hexanol[b]	24.95	24.07	23.19	22.31	21.43	20.55	19.67	18.79	17.91	17.03	16.15	26.27	0.0880	±0.06

[a] Ref. [96].
[b] Ref. [98].
[c] Ref. [101].
[d] Ref. [99].
[e] Ref. [100].

TABLE 50. Hydrazines [251]

(Maximum Bubble Pressure-A)

Hydrazine	Surface tension (±0.15)							Least squares constants		σ_γ
	15°	20°	25°	30°	40°	50°	60 °C	a	b	
Hydrazine[a]	68.80	67.60	66.39	65.19	62.78	-------	-------	72.41	0.2407	±0.02
1,1-Diethyl-	25.39	24.87	24.35	23.83	22.79	21.75	20.71	26.95	0.1040	±0.02
1,1-Dipropyl-	-------	25.16	24.65	24.15	23.14	22.13	21.13	27.17	0.1007	±0.06
1,1-Dibutyl-	-------	26.17	25.71	25.25	24.34	-------	-------	27.99	0.0912	±0.00
1,1-Dipentyl-	27.43	26.95	26.48	26.01	25.06	24.11	23.16	28.85	0.0948	±0.03

[a] Ref. [12] (±0.15).

TABLE 51.1. Olefins I [1]

Compound	Surface tension							Least squares constants	
	−30°	−20°	−10°	10°	20°	25°	30 °C	a	b
1-Pentene	21.50	20.40	19.30	17.10	16.00	15.45	-------	18.20	0.1099
cis-2-Pentene	-------	-------	-------	18.56	17.39	16.80	16.21	19.73	0.1172
trans-2-Pentene	-------	-------	-------	17.90	16.91	16.41	15.91	*18.90*	*0.09972*
2-Methyl-1-butene	-------	-------	-------	17.66	16.51	15.94	15.37	18.81	0.1148
3-Methyl-1-butene	-------	-------	-------	15.39	14.36	13.84	-------	16.42	0.1031

TABLE 51.2. Olefins II [112]

(Capillary Rise Method-N_2)

Compound	Surface tension (±0.10)											Least squares constants	
	10°	20°	25°	30°	40°	50°	60°	70°	80°	90°	100 °C	a	b
1-Hexene	19.44	18.42	17.90	17.39	16.36	15.33	14.31	-------	-------	-------	-------	20.47	0.1027
1-Heptene	21.29	20.30	19.80	19.31	18.32	17.33	16.34	15.34	14.35	-------	-------	22.28	0.0990
1-Octene	22.72	21.76	21.28	20.81	19.85	18.89	17.93	16.97	16.02	15.06	14.10	23.68	0.0958
1-Nonene	23.96	23.02	22.56	22.09	21.15	20.21	19.27	18.33	17.40	16.46	15.52	24.90	0.0937
1-Decene	24.92	24.00	23.54	23.08	22.16	21.24	20.33	19.41	18.49	17.57	16.65	25.84	0.0919
1-Undecene	25.77	24.86	24.41	23.96	23.05	22.15	21.24	20.34	19.43	18.53	17.62	26.67	0.0904
1-Dodecene	26.49	25.60	25.15	24.71	23.82	22.92	22.03	21.14	20.25	19.36	18.47	27.38	0.0891
1-Tridecene[a]	27.13	26.24	25.80	25.36	24.48	23.59	22.71	21.82	20.94	20.06	19.17	28.01	0.0883
1-Tetradecene	27.68	26.80	26.36	25.92	25.04	24.16	23.29	22.41	21.53	20.65	19.77	28.56	0.0879
1-Pentadecene[a]	28.17	27.31	26.87	26.44	25.57	24.70	23.84	22.97	22.11	21.24	20.37	29.04	0.0866
1-Hexadecene	28.61	27.75	27.32	26.89	26.03	25.16	24.30	23.44	22.58	21.72	20.86	29.47	0.0861
1-Heptadecene[a]	-------	28.14	27.71	27.29	26.43	25.58	24.72	23.87	23.01	22.16	21.30	29.85	*0.0854*
1-Octadecene[a]	-------	28.49	28.06	27.63	26.78	25.93	25.08	24.23	23.37	22.52	21.67	30.19	0.0852
1-Nonadecene[a]	-------	-------	28.39	27.97	27.13	26.28	25.44	24.60	23.76	22.92	22.08	30.49	0.0841
1-Eicosene[a]	-------	-------	28.69	28.27	27.43	26.58	25.74	24.90	24.06	23.22	22.38	30.79	0.0841

[a] Ref. [1].

TABLE 51.3. Paraffins

Compound	Surface tension													Least squares constants	
	−20°	−10°	10°	20°	25°	30°	40°	50°	60°	70°	80°	90°	100 °C	a	b
2-Methylbutane[a]	19.41	18.30	16.10	14.99	14.44	------	------	------	------	------	------	------	------	17.20	0.1103
2-Methylpentane[b]	------	------	18.37	17.38	16.87	16.37	15.36	14.39	13.39	------	------	------	------	19.37	0.09967
3-Methylpentane[c]	------	------	19.20	18.14	17.61	17.08	16.02	14.96	13.90	------	------	------	------	20.26	0.1060
3-Ethylpentane[d]	24.78	23.55	21.49	20.46	19.94	19.42	18.39	17.36	16.33	15.30	14.26	------	------	22.52	0.1032
2-Methylhexane[b]	23.15	22.18	20.26	19.29	18.81	18.33	17.37	16.40	15.44	14.48	13.51	12.45	------	21.22	0.09635
3-Methylhexane[b]	23.67	22.70	20.76	19.79	19.31	18.82	17.85	16.88	15.91	14.94	13.97	13.00	------	21.73	0.09699
3-Ethylhexane[c]	------	------	22.60	21.62	21.13	20.64	19.66	18.68	17.70	16.72	15.74	14.76	13.78	23.58	0.0980
2-Methylheptane[c]	------	------	21.72	20.75	20.27	19.79	18.82	17.86	16.90	15.93	14.97	14.00	13.04	22.68	0.0964
3-Methylheptane[c]	------	------	22.28	21.31	20.82	20.34	19.37	18.40	17.43	16.46	15.49	14.52	13.55	23.25	0.0970
4-Methylheptane[c]	------	------	22.11	21.12	20.63	20.14	19.15	18.17	17.19	16.20	15.22	14.23	13.25	23.09	0.0984
3-Ethylheptane[b]	------	------	23.76	22.83	22.36	21.89	20.95	20.01	19.08	------	------	------	------	24.70	0.0937
4-Ethylheptane[b]	------	------	23.76	22.83	22.36	21.89	20.95	20.01	19.08	------	------	------	------	24.70	0.0937
2-Methyloctane[b]	------	------	22.82	21.88	21.41	20.94	20.00	19.06	18.12	------	------	------	------	23.76	0.0940
3-Methyloctane[b]	------	------	23.28	22.34	21.87	21.40	20.46	19.52	18.58	------	------	------	------	24.22	0.0940
4-Methyloctane[b]	------	------	23.28	22.34	21.87	21.40	20.46	19.52	18.58	------	------	------	------	24.22	0.0940
2,2-Dimethylbutane[b]	------	------	17.30	16.31	15.81	15.32	14.33	------	------	------	------	------	------	18.29	0.0990
2,3-Dimethylbutane[b]	------	------	18.38	17.38	16.88	16.38	15.38	14.38	------	------	------	------	------	19.38	0.09998
2,2-Dimethylpentane[d]	21.85	20.90	18.98	18.03	17.55	17.07	16.11	15.16	14.20	13.24	12.29	------	------	19.94	0.09565
2,3-Dimethylpentane[d]	23.95	22.95	20.97	19.97	19.47	18.98	17.98	16.99	15.99	15.00	13.99	------	------	21.96	0.09945
2,4-Dimethylpentane[d]	22.03	21.06	19.12	18.15	17.66	17.18	16.20	15.23	14.26	13.29	12.32	------	------	20.09	0.09715
3,3-Dimethylpentane[d]	23.58	22.59	20.59	19.60	19.10	18.60	17.61	16.61	15.62	14.62	13.63	------	------	21.59	0.09955
2,2-Dimethylhexane[b]	------	------	20.50	19.61	19.17	18.73	17.84	16.96	16.08	15.19	14.31	13.42	12.54	21.38	0.0884
2,3-Dimethylhexane[b]	------	------	21.91	21.00	20.54	20.09	19.18	18.26	17.35	16.44	15.53	14.62	13.71	22.82	0.0911
2,4-Dimethylhexane[b]	------	------	20.96	20.05	19.59	19.14	18.23	17.33	16.42	15.51	14.61	13.70	12.79	21.86	0.09069
2,5-Dimethylhexane[c]	------	------	20.77	19.86	19.40	18.94	18.03	17.12	16.21	15.30	14.38	13.47	12.56	21.68	0.09121
3,3-Dimethylhexane[b]	------	------	21.62	20.70	20.25	19.79	18.88	17.96	17.05	16.14	15.23	14.31	13.40	22.53	0.09134
3,4-Dimethylhexane[c]	------	------	22.67	21.72	21.24	20.76	19.81	18.86	17.91	16.96	16.00	15.05	14.10	23.62	0.09521
3,4-Diethylhexane[c]	------	------	24.39	23.51	23.06	22.62	21.74	20.86	19.98	19.10	18.21	17.33	------	25.27	0.08820
2,2-Dimethylheptane[c]	------	------	21.82	20.89	20.42	19.96	19.03	18.10	17.17	------	------	------	------	22.75	0.0930
2,3-Dimethylheptane[c]	------	------	23.35	22.40	21.93	21.46	20.51	19.56	18.61	------	------	------	------	24.30	0.09477

TABLE 51.3. Paraffins—Continued

Compound	Surface tension											Least squares constants	
	10°	20°	25[c]	30°	40°	50°	60°	70°	80°	90°	100 °C	a	b
2,4-Dimethylheptane[b]	22.28	21.35	20.89	20.42	19.49	18.56	17.64	------	------	------	------	23.21	0.09290
2,5-Dimethylheptane[b]	22.28	21.35	20.89	20.42	19.49	18.56	17.64	------	------	------	------	23.21	0.09290
2,6-Dimethylheptane[e]	21.88	21.00	20.55	20.11	19.22	18.34	17.45	16.56	15.68	14.79	13.90	22.77	0.08868
3,3-Dimethylheptane[b]	22.99	22.06	21.60	21.13	20.20	19.27	18.35	------	------	------	------	23.92	0.0929
3,4-Dimethylheptane[b]	23.78	22.85	22.38	21.91	20.97	20.04	19.10	------	------	------	------	24.72	0.09367
3,5-Dimethylheptane[b]	22.77	21.84	21.37	20.90	19.97	19.03	18.09	------	------	------	------	23.71	0.09361
4,4-Dimethylheptane[b]	22.99	22.06	21.60	21.13	20.20	19.27	18.35	------	------	------	------	23.92	0.09291
3-Ethyl-2-methylpentane[b]	22.45	21.52	21.06	20.59	19.66	18.73	17.80	16.87	15.94	15.01	14.08	23.38	0.0930
3-Ethyl-3-methylpentane[b]	22.91	21.99	21.54	21.08	20.16	19.24	18.33	17.41	16.49	15.57	14.65	23.83	0.09179
2,2,3-Trimethylpentane[b]	21.57	20.67	20.22	19.77	18.88	17.99	17.09	16.20	15.30	14.40	13.51	22.46	0.08950
2,2,4-Trimethylpentane[b]	19.67	18.77	18.33	17.89	17.00	16.11	15.23	14.34	13.45	12.56	11.68	20.55	0.08876
2,3,3-Trimethylpentane[b]	22.48	21.57	21.12	20.66	19.76	18.85	17.94	17.03	16.13	15.21	14.30	23.39	0.09086
2,3,4-Trimethylpentane[b]	22.07	21.16	20.70	20.24	19.32	18.41	17.49	16.53	15.66	14.74	13.83	22.99	0.09165
2,2,3-Trimethylbutane[d]	19.73	18.75	18.27	17.78	16.81	15.84	14.86	13.89	12.92	11.95	------	20.70	0.09726
3-Ethyl-2-methylhexane[b]	23.73	22.80	22.34	21.87	20.94	20.01	19.08	------	------	------	------	20.66	0.0930

Compound	Surface tension							Least squares constants	
	10°	20°	25°	30°	40°	50°	60 °C	a	b
4-Ethyl-2-methylhexane	22.75	21.80	21.32	20.85	19.90	18.95	18.00	23.70	0.0946
3-Ethyl-3-methylhexane	24.19	23.25	22.77	22.30	21.36	20.41	19.47	25.14	0.0946
4-Ethyl-3-methylhexane	24.21	23.27	22.80	22.34	21.40	20.47	19.53	25.14	0.09344
2,2,3-Trimethylhexane	22.77	21.87	21.42	20.97	20.07	19.17	18.27	23.67	0.09005
2,2,4-Trimethylhexane	21.35	20.51	20.09	19.67	18.83	18.00	17.16	22.19	0.08388
2,2,5-Trimethylhexane	20.91	20.03	19.59	19.16	18.28	17.40	16.52	21.79	0.08788
2,3,3-Trimethylhexane	23.31	22.40	21.95	21.50	20.59	19.69	18.78	24.21	0.09048
2,3,4-Trimethylhexane	23.73	22.80	22.33	21.87	20.94	20.01	19.08	24.66	0.09308
2,3,5-Trimethylhexane	22.15	21.27	20.82	20.38	19.50	18.61	17.72	23.04	0.08860
2,4,4-Trimethylhexane	22.00	21.17	20.75	20.33	19.49	18.66	17.82	22.84	0.08363
3,3,4-Trimethylhexane	24.23	23.27	22.79	22.31	21.35	20.39	19.44	25.19	0.09591
3,3-Diethylpentane	24.76	23.75	23.29	22.83	21.91	21.00	20.08	25.58	0.09165
3-Ethyl-2,2-dimethylpentane	23.34	22.39	21.92	21.45	20.51	19.56	18.62	24.28	0.0944
3-Ethyl-2,3-dimethylpentane	24.81	23.87	23.40	22.94	22.00	21.07	20.14	25.74	0.09343
3-Ethyl-2,4-dimethylpentane	23.76	22.81	22.34	21.87	20.93	19.98	19.04	24.70	0.0944

TABLE 51.3. Paraffins—Continued

Compound	Surface tension											Least squares constants	
	10°	20°	25°	30°	40°	50°	60°	70°	80°	90°	100 °C	*a*	*b*
2,2,3,3-Tetramethylpentane[d]	24.28	23.38	22.94	22.49	21.60	20.70	19.81	-------	-------	-------	-------	25.17	0.08933
2,2,3,4-Tetramethylpentane[d]	22.85	21.98	21.55	21.12	20.25	19.39	18.53	-------	-------	-------	-------	23.71	0.08638
2,2,4,4-Tetramethylpentane[d]	21.28	20.37	19.92	19.46	18.55	17.64	16.74	-------	-------	-------	-------	22.19	0.09091
2,3,3,4-Tetramethylpentane[d]	24.18	23.31	22.88	22.44	21.58	20.72	19.85	-------	-------	-------	-------	25.04	0.08645
2,7-Dimethyloctane[e]	23.39	22.49	22.04	21.60	20.70	19.81	18.92	18.02	17.13	16.23	15.34	24.23	0.08941
4,5-Dimethyloctane[e]	24.29	23.41	22.98	22.54	21.67	20.79	19.92	19.05	18.18	17.30	16.43	25.15	0.0873
11-Decyldocosane[f]	-------	30.2	-------	29.4	28.6	27.8	27.0	26.2	25.4	24.6	-------	31.8	0.0800

[a] Ref. [91] (Capillary Rise Method-A) (±0.10).
[b] Ref. [1].
[c] Ref. [174] (Maximum Bubble Pressure-A) (±0.15).
[d] Ref. [182] (Maximum Bubble Pressure-A) (±0.15).
[e] Ref. [238] (Capillary Rise Method-A) (±0.10).
[f] Ref. [124] (Capillary Rise Method-A) (±0.20).

TABLE 51.4. Normal paraffins [112]

(Capillary Rise Method-N_2)

Compound	Surface tension (±0.10)												Least squares constants	
	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°	110°	120 °C	*a*	*b*
Pentane	17.15	16.05	14.94										18.25	0.11021
Hexane	19.42	18.40	17.38	16.36	15.34	14.32							20.44	0.1022
Heptane	21.12	20.14	19.17	18.18	17.20	16.22	15.24	14.26	13.28				22.10	0.0980
Octane	22.57	21.62	20.67	19.71	18.77	17.81	16.86	15.91	14.96	14.01	13.06	12.11	23.52	0.09509
Nonane	23.79	22.85	21.92	20.98	20.05	19.12	18.18	17.24	16.31	15.37	14.44	13.50	24.72	0.09347
Decane	24.75	23.83	22.91	21.99	21.07	20.15	19.23	18.31	17.39	16.47	15.55	14.63	25.67	0.09197
Undecane	25.56	24.66	23.76	22.86	21.96	21.05	20.15	19.25	18.35	17.45	16.55	15.65	26.46	0.09010
Dodecane	26.24	25.35	24.47	23.58	22.70	21.81	20.93	20.05	19.16	18.28	17.39	16.51	27.12	0.08843
Tridecane	26.86	25.99	25.11	24.24	23.37	22.50	21.63	20.75	19.88	19.01	18.14	17.27	27.73	0.08719
Tetradecane	27.43	26.56	25.69	24.82	23.96	23.09	22.22	21.35	20.48	19.61	18.74	17.87	28.30	0.08688
Pentadecane		27.07	26.21	25.35	24.50	23.64	22.78	21.93	21.07	20.21	19.36	18.50	28.78	0.08565
Hexadecane		27.47	26.62	25.76	24.91	24.06	23.20	22.35	21.49	20.64	19.79	18.93	29.18	0.08540
Heptadecane			27.06	26.22	25.38	24.52	23.68	22.83	21.99	21.14	20.29	19.45	29.60	0.08460
Octadecane			27.45	26.61	25.77	24.92	24.08	23.24	22.39	21.55	20.71	19.87	29.98	0.08428
Nonadecane[a]		28.59	27.75	26.91	26.07	25.24	24.40	23.56	22.73	21.89	21.05	20.21	30.26	0.08373
Eicosane[a]		28.87	28.04	27.21	26.38	25.54	24.71	23.88	23.04	22.21	21.38	20.54	30.54	0.08329

TABLE 51.4. Normal paraffins [112]—Continued

Compound	Surface tension (±0.12)											Least squares constants		σ_γ
	70°	80°	90°	100°	110°	120°	130°	140°	150°	160°	180 °C	*a*	*b*	
Hexacosane[b]	26.33	25.59	24.86	24.13	23.39	22.66	21.93	21.20	20.46	19.73	18.26	31.46	0.07332	±0.05
Hexacontane[b]					24.48	23.90	23.31	22.73	22.15	21.57	20.40	30.89	0.05827	±0.02

[a] Ref. [1].

[b] Ref. [191] (Capillary Rise Method-A).

TABLE 52. Hydrocarbons from diphenylmethane [53]

(Maximum Bubble Pressure-A)

Compound	Surface tension (±0.2)												Least squares constants		σ_γ	Avg. % error
	20°	30°	40°	50°	60°	70°	80°	90°	100°	150°	200°	250 °C	a	b		
Ditolylmethane[a]	36.42	35.56	34.70	33.84	32.98	32.12	31.25	30.39	29.53	25.23	20.93	16.62	38.14	0.08607	±0.27	0.26
Dicumenylmethane	33.05	32.28	31.51	30.74	29.97	29.20	28.43	27.66	26.89	23.04	19.20	15.35	34.59	0.07697	±0.27	0.35

[a] Mixture of isomers.

TABLE 53. Inorganic sulfur compounds

Compound	Surface tension							Least squares constants		σ_γ
	10°	20°	30°	40°	50°	60°	70 °C	a	b	
Carbon disulfide[a]	33.81	32.32	30.84	29.35	27.87	-------	-------	35.29	0.1484	±0.02
Thionyl bromide[b]	45.53	44.78	44.03	43.28	42.53	41.78	-------	46.28	0.0750	--------

[a] Ref. [177, 261] (Capillary Rise Method-A) (±0.3). [b] Ref. [147] (Capillary Rise Method).

TABLE 54. The ionones and derivatives [158]

(Cap. Rise-A)

Compound	Surface tension (±0.10)							Least squares constants		σ_γ
	10°	20°	30°	40°	50°	60°	70 °C	a	b	
α-Ionone	33.15	32.20	31.25	30.30	29.35	28.41	27.46	34.10	0.0949	±0.01
β-Ionone	34.41	33.46	32.51	31.56	30.61	29.66	28.71	35.36	0.09497	±0.09
3-Methyl-4-(2,6,6-trimethyl-2-cyclohexen-1-yl)-3-buten-2-one	33.13	32.17	31.20	30.24	29.28	28.32	27.36	34.09	0.0962	±0.01
4-(2,2,6-Trimethylcyclohexyl)-2-butanol	31.43	30.57	29.71	28.85	27.99	27.14	26.28	32.29	0.0859	±0.01
3-Methyl-4-(2,2,6-trimethylcyclohexyl)-2-butanol	32.11	31.26	30.40	29.55	28.69	27.83	26.98	32.97	0.0856	±0.04
4-(2,6,6-Trimethyl-2-cyclohexen-1-yl)-2-butanol	31.72	30.89	30.07	29.24	28.42	27.60	26.77	32.54	0.0824	±0.01
4-(2,6,6-Trimethyl-1-cyclohexen-1-yl)-2-butanol	32.55	31.68	30.81	29.94	29.07	28.20	27.33	33.42	0.0870	±0.01
3-Methyl-4-(2,6,6-trimethyl-2-cyclohexen-1-yl)-2-butanol	31.41	30.63	29.85	29.07	28.29	27.52	26.74	32.19	0.0779	±0.01
4-(2,6,6-Trimethyl-2-cyclohexen-1-yl)-2-butanol acetate	30.52	29.59	28.67	27.75	26.82	25.90	24.98	31.44	0.0923	±0.01
4-(2,6,6-Trimethyl-1-cyclohexen-1-yl)-2-butanol actate	30.55	29.67	28.80	27.92	27.04	26.16	25.28	31.43	0.0878	±0.01
3-Methyl-4-(2,6,6-trimethyl-2-cyclohexen-1-yl)-2-butanol acetate	30.39	29.47	28.54	27.62	26.69	25.77	24.84	31.32	0.0925	±0.01

TABLE 55. Isomers of chlorododecane [70]

(Maximum Bubble Pressure-A)

Compound	Surface tension (±0.1)							Least squares constants	
	20°	30°	40°	50°	60°	70°	80 °C	*a*	*b*
1-Chlorododecane	29.87	28.82	27.87	27.02	26.05	25.17	24.47	31.56	0.0904
2-Chlorododecane	28.62	27.70	26.88	25.99	25.03	24.07	23.23	30.45	0.0903
3-Chlorododecane	28.58	27.59	26.72	25.78	25.02	24.19	23.22	30.26	0.0878
4-Chlorododecane	28.01	27.30	26.37	25.45	24.59	23.81	22.94	29.47	0.0856
5-Chlorododecane	28.08	27.20	26.19	25.41	24.57	23.71	22.86	29.76	0.0866
6-Chlorododecane	27.94	27.08	26.23	25.25	24.37	23.60	22.75	29.67	0.0871

TABLE 56. Isoxazole and derivatives [208]

(Maximum Bubble Pressure-A)

Compound	Surface tension (±0.15)						Least squares constants		σ_γ
	10°	20°	30°	40°	50°	60 °C	*a*	*b*	
Isoxazole	37.42	35.95	34.49	33.02	31.56	30.10	38.88	0.1464	±0.10
3-Methylisoxazole	36.35	35.13	33.91	32.69	31.47	30.26	37.57	0.1219	±0.03
5-Methylisoxazole	34.38	33.12	31.86	30.60	29.34	28.09	35.64	0.1259	±0.01
3,4-Dimethylisoxazole	36.85	35.76	34.66	33.57	32.47	31.38	37.95	0.1095	±0.03
3,5-Dimethylisoxazole	34.10	32.89	31.69	30.48	29.27	28.06	35.31	0.1208	±0.04
4,5-Dimethylisoxazole	33.91	32.81	31.72	30.62	29.53	28.44	35.00	0.1094	±0.01
3,4,5-Trimethylisoxazole	34.77	33.56	32.35	31.14	29.93	28.72	35.98	0.1210	±0.02

TABLE 57.1. Azodiformates [251]

(Maximum Bubble Pressure-A)

Azodiformate	Surface tension (±0.1)										Least squares constants		σ_γ
	15°	20°	25°	30°	40°	50°	60°	70°	80°	90 °C	*a*	*b*	
Ethyl	33.87	33.33	32.80	32.27	31.21	30.14	29.08	28.02	26.96	25.89	35.46	0.1063	±0.06
Propyl	32.64	32.14	31.63	31.13	30.12	29.09	28.11	27.10	26.09	25.09	34.15	0.1007	±0.13
Butyl	31.81	31.36	30.91	30.46	29.57	28.67	27.77	26.88	25.98	25.09	33.15	0.0896	±0.11

TABLE 57.2. Oximes

Oxime	Surface tension (±0.1)										Least squares constants		σ_γ
	15°	20°	25°	30°	40°	50°	60°	70°	80°	90 °C	a	b	
Acetaldehyde[a]	32.53	31.96	31.39	30.83	29.69	28.56	27.43	------	------	------	34.23	0.1134	±0.10
Propionaldehyde[a]	30.35	29.82	29.29	28.76	27.70	26.64	25.59	------	------	------	31.94	0.1059	±0.08
Butyraldehyde[a]	29.37	28.90	28.44	27.98	27.06	26.13	25.18	24.27	23.37	22.44	30.75	0.0923	±0.04
2-Butanone[a]	30.36	29.85	29.33	28.82	27.80	26.78	25.76	24.74	23.71	26.69	31.89	0.1022	±0.06
2-Pentanone[a]	29.37	28.90	28.44	27.97	27.04	26.10	25.17	24.24	23.31	22.37	30.77	0.0933	±0.13
3-Pentanone[a]	------	------	28.70	28.21	27.25	26.28	25.32	24.35	23.39	22.42	31.11	0.0965	±0.08
3-Hexanone[a]	29.16	28.70	28.25	27.80	26.89	25.98	25.07	24.16	23.26	22.35	30.52	0.0908	±0.06
4-Heptanone[a]	28.36	27.93	27.50	27.06	26.20	25.33	24.47	23.60	22.74	21.87	29.66	0.0865	±0.09

Oxime	Surface tension (±0.4)									Least squares constants		σ_γ
	20°	30°	40°	50°	60°	70°	80°	90°	100 °C	a	b	
Acetone[b]	29.26	28.28	27.30	26.32	25.34	24.35	23.37	22.41	21.42	31.23	0.09825	±0.05
Isovaleraldehyde[b]	26.38	25.45	24.72	23.89	23.05	22.22	21.39	20.55	19.72	28.05	0.08329	±0.08
4-Methyl-3-penten-2-one[b]	30.84	29.95	29.06	28.17	27.28	26.40	25.51	24.62	23.73	32.62	0.08892	±0.34
Heptanal[b]	28.01	27.27	26.52	25.78	25.03	24.29	23.55	22.80	22.06	29.50	0.07442	±0.05

[a] Ref. [251] (Maximum Bubble Pressure-A).

[b] Ref. [46a] (Capillary Rise-A).

TABLE 57.3. Azines of ketones [251]

(Maximum Bubble Pressure Method)

Ketazine	Surface tension (±0.1)										Least squares constants		σ_γ
	15°	20°	25°	30°	40°	50°	60°	70°	80°	90 °C	a	b	
Acetone	27.22	26.67	26.13	25.58	24.49	23.40	22.32	------	------	------	28.85	0.1089	±0.06
2-Butanone	27.06	26.58	26.09	25.61	24.64	23.67	22.71	21.74	20.77	19.81	28.51	0.0967	±0.08
2-Pentanone	27.48	27.01	26.58	26.06	25.11	24.16	23.21	22.26	21.32	20.37	28.90	0.0948	±0.04
3-Pentanone	27.14	26.66	26.19	25.72	24.77	23.82	22.87	21.92	20.98	20.03	28.56	0.0948	±0.12
3-Hexanone	27.05	26.61	26.17	25.73	24.85	23.97	23.10	22.22	21.34	------	28.37	0.0879	±0.03
4-Heptanone	27.00	26.57	26.13	25.70	24.84	23.98	23.12	22.26	21.29	21.53	28.29	0.0862	±0.11

TABLE 58.1. Aromatic ketones

Compound	Surface tension												Least squares constants		σ_γ
	20°	40°	60°	80°	100°	110°	120°	130°	150°	170°	200°	220 °C	a	b	
2-Hydroxyacetophenone[b]	41.94	39.61	37.28	34.95	32.62	31.45	30.29	29.12	26.79	24.46	20.97	-------	44.27	0.1165	±0.09
4-Hydroxyacetophenone[b]	-------	-------	-------	-------	-------	-------	40.93	40.04	38.26	36.47	33.80	-------	51.62	0.08909	±0.20
3-Methyl-2,4-pentanedione[c]	-------	30.91	28.84	26.78	24.72	23.69	22.66	-------	-------	-------	-------	-------	35.03	0.1031	±0.02
1,5-Diphenylpentanetrione[a]	-------	-------	-------	-------	-------	34.07	33.16	32.26	30.44	28.63	-------	-------	44.04	0.09065	±0.20
4-Phenyl-3-buten-2-one[f]	-------	-------	39.93	37.78	35.63	34.55	33.48	32.40	30.25	28.10	24.87	22.72	46.39	0.1076	±0.14
Benzophenone[d]	44.05	41.80	39.54	37.29	35.03	33.90	32.77	-------	-------	-------	-------	-------	46.31	0.1128	±0.02
2,2,4,4-Tetrachlorobenzophenone[e]	-------	-------	-------	-------	-------	-------	-------	-------	31.62	30.55	28.95	27.88	39.64	0.05346	±0.13
3,3,4,4-Tetrachlorobenzophenone[e]	-------	-------	-------	-------	-------	-------	-------	-------	35.39	33.64	31.01	29.26	48.54	0.08764	±0.07
1-Phenyl-1-penten-3-one[f]	-------	-------	38.34	36.24	34.14	33.09	32.04	30.99	28.88	26.78	23.63	-------	44.65	0.1051	±0.10

[a] Ref. [189] (Capillary Rise Method-A) (±0.2).
[b] Ref. [27] (Maximum Bubble Pressure-A) (±0.2).
[c] Ref. [261] (Capillary Rise Method-A) (±0.4).
[d] Ref. [255] (Capillary Rise Method-V) (±0.4).
[e] Ref. [108] (Maximum Bubble Pressure-N_2) (±2.0).
[f] Ref. [71] (Capillary Rise Method-A) (±1.5).

TABLE 58.2. Aliphatic ketones [163]

(Maximum Bubble Pressure Method-A)

Compound	Surface tension (±0.10)						Least squares constants	
	25°	30°	35°	40°	45°	50 °C	*a*	*b*
2-Butanone	23.96	23.40	22.84	22.28	21.72	21.16	26.77	0.1122
2-Pentanone	23.26	22.93	22.60	22.28	21.94	21.62	24.89	0.06547
2-Hexanone	25.45	24.90	24.36	23.81	23.27	22.72	28.18	0.1092
2-Heptanone	26.12	25.59	25.06	24.53	24.01	23.48	28.76	0.10564
3-Pentanone	24.74	24.22	23.70	23.17	22.65	22.12	27.36	0.1047
3-Hexanone	25.04	24.50	23.96	23.42	22.88	22.33	27.75	0.1083
3-Heptanone	25.70	25.20	24.69	24.18	23.67	23.16	28.24	0.1015
3-Octanone	26.19	25.70	25.22	24.73	24.25	23.76	28.61	0.09696
4-Heptanone	25.46	24.93	24.40	23.87	23.34	22.81	28.11	0.1060
4-Octanone	25.72	25.29	24.86	24.43	24.00	23.57	27.88	0.08625
4-Nonanone	26.28	25.80	25.32	24.84	24.36	23.88	28.68	0.096
5-Nonanone	26.28	25.79	25.31	24.82	24.33	23.84	28.72	0.0975
5-Decanone	26.38	26.13	25.88	25.63	25.39	25.13	27.62	0.04971
6-Undecanone	27.12	26.64	26.16	25.68	25.20	24.72	29.52	0.096
Acetone[a]	24.02	22.90	22.34	21.78	21.22	20.66	26.26	0.112

[a] Ref. [40] (±0.15).

TABLE 58.3. Miscellaneous ketones [41]

(Capillary Rise Method-A)

Compound	Surface tension (±0.1)							Least squares constants		σ_γ
	20°	30°	40°	50°	60°	70°	85 °C	*a*	*b*	
2-Nonanone	26.39	25.60	24.80	24.01	23.22	22.42	21.23	27.98	0.0794	±0.13
3-Nonanone	27.43	26.49	25.54	24.59	23.64	22.69	21.27	29.33	0.0948	±0.07
3-Decanone	27.82	26.93	26.05	25.16	24.27	23.39	22.06	29.59	0.0886	±0.03
1-Phenyl-2-propanone	38.00	36.88	35.75	34.62	33.49	32.36	30.67	40.26	0.1128	±0.04
1-Phenyl-2-butanone	36.57	35.52	34.46	33.41	32.36	31.30	29.72	38.68	0.1054	±0.04
1-Phenyl-2-pentanone	34.91	33.91	32.90	31.89	30.88	29.87	28.36	36.93	0.1008	±0.06
1-Phenyl-2-butanone	37.94	36.87	35.80	34.73	33.67	32.60	31.00	40.07	0.1067	±0.04
1-Phenyl-3-pentanone	36.52	35.51	34.50	33.48	32.47	31.46	29.95	38.54	0.1011	±0.09
1-Phenyl-3-hexanone	34.83	33.85	32.88	31.90	30.93	29.95	28.49	36.78	0.0975	±0.09
Acetophenone	39.61	38.46	37.30	36.15	35.00	33.84	32.11	41.92	0.1154	±0.06
Propiophenone	37.37	36.30	35.23	34.16	33.09	32.02	30.41	39.51	0.1070	±0.06
Butyrophenone	35.49	34.54	33.58	32.62	31.66	30.70	29.27	37.41	0.0958	±0.11

TABLE 59.1. Azine of anisaldehyde [59]

(Horizontal Capillary Pressure-A)

Surface tension (±0.15) (transition temperature 180.5 °C)

169°	172°	174°	176°	178°	179°	179.5°	180°	181.5°	183.5°	186°	189°	194°	199°	204 °C
32.97	30.82	30.04	29.34	29.65	29.90	30.23	30.50	30.38	30.03	30.09	29.75	29.25	28.85	28.42

TABLE 59.2. 4,4'-Azoxydiphenetole [196]

(Ring Detachment-A)

Surface tension (±0.10) (transition temperature 168.3°–168.6 °C)

141.2°	158.3°	159.8°	164.2°	166.8°	168.3°	168.5°	168.6°	168.8°	169.8°	170.7°	172.2°	174.7°	181.9°	190.8°	198.0 °C
31.5	29.8	29.7	29.2	29.1	28.8	28.8	28.8	28.8	28.8	28.6	28.5	28.3	27.6	27.0	26.4

TABLE 59.3. Ethyl 4,4'-azoxydibenzoate [196]

(isotropic phase)

(Ring Detachment-A)

Surface tension (±0.10) (transition temperature 122.8 °C)

123.0°	125.4°	127.1°	130.5°	135.0°	140.0°	146.3°	149.7°	155.0°	160.2°	166.5°	170.8°	177.2°	181.0°	191.4°	200.7 °C
26.6	26.8	27.1	27.3	27.3	27.4	27.6	27.7	27.7	27.6	27.6	27.6	27.3	27.1	26.5	25.9

TABLE 60. Mercury

Surface tension (±2.0)														Least squares constants	
5°	10°	15°	20°	25°	30°	35°	40°	50°	60°	80°	100°	150°	200 °C	*a*	*b*
489.6	488.6	487.5	486.5	485.5	484.5	483.4	482.4	480.4	478.3	474.2	470.1	459.9	449.6	490.6	0.2049

Ref. [184] (Sessile Drop-V).
Ref. [18] (Maximum Bubble Pressure-CO_2).
Ref. [123] (Sessile Drop-V).

TABLE 61.1. Alkyl 1-naphthoates and 2-naphthoates [4]

(Maximum Bubble Pressure Method-A)

Alkyl 1-naphthoates	Surface tension (±0.20)				Least squares constants		σ_γ
	20°	40°	60°	85 °C	a	b	
Methyl	44.09	41.99	39.90	37.28	46.18	0.1047	±0.06
Ethyl	41.37	39.19	37.00	34.28	43.55	0.1091	±0.03
Propyl	39.60	37.71	35.81	33.44	41.50	0.0948	±0.10
Butyl	38.18	36.44	34.69	32.51	39.93	0.0873	±0.09
Pentyl	37.20	35.44	33.67	31.47	38.96	0.0881	±0.03
Hexyl	36.58	34.92	33.25	31.18	38.24	0.0831	±0.07
Heptyl	35.87	34.28	32.70	30.72	37.45	0.0792	±0.03

Alkyl 2-naphthoates	Surface tension (±0.20)				Least squares constants		σ_γ
	20°	40°	60°	85 °C	a	b	
Ethyl	41.64	39.43	37.23	34.47	43.85	0.1104	±0.11
Propyl	38.59	36.96	35.33	33.29	40.22	0.0815	±0.34
Butyl	---	36.21	34.41	32.16	39.81	0.0900	±0.05
Pentyl	37.20	35.51	33.81	31.69	38.90	0.0848	±0.06
Hexyl	36.79	35.14	33.50	31.44	38.44	0.0824	±0.03
Heptyl	---	34.66	33.08	31.10	37.83	0.0792	±0.21

TABLE 61.2. Alkyl 1-naphthaleneacetates and 2-naphthaleneacetates [4]

(Maximum Bubble Pressure-A)

Alkyl 1-naphthaleneacetates	Surface tension (±0.2)				Least squares constants		σ_γ
	20°	40°	60°	85 °C	a	b	
Methyl	45.14	43.00	40.85	38.18	47.28	0.1071	±0.06
Ethyl	41.09	39.01	36.92	34.32	43.17	0.1041	±0.05
Propyl	38.88	36.96	35.06	32.65	40.80	0.0959	±0.02
Butyl	37.61	35.80	33.99	31.73	39.42	0.0905	±0.05
Pentyl	36.34	34.63	32.92	30.78	38.05	0.0855	±0.04
Hexyl	35.79	34.15	32.51	30.46	37.43	0.0820	±0.12
Heptyl	35.18	33.60	32.01	30.03	36.77	0.0793	±0.06

TABLE 61.2. Alkyl 1-naphthaleneacetates and 2-naphthaleneacetates [4]—Continued

(Maximum Bubble Pressure-A)

Alkyl 2-naphthaleneacetates	Surface tension (±0.2)				Least squares constants		σ_γ
	20°	40°	60°	85 °C	*a*	*b*	
Methyl	43.85	41.45	39.04	36.03	46.26	0.1203	±0.18
Ethyl	40.67	38.66	36.65	34.14	42.68	0.1005	±0.04
Propyl	38.81	36.89	34.98	32.59	40.72	0.0957	±0.05
Butyl	37.75	35.97	34.18	31.95	39.54	0.0893	±0.11
Pentyl	37.04	35.37	33.70	31.61	38.71	0.0835	±0.15
Hexyl	36.22	34.64	33.05	31.08	37.80	0.0791	±0.06
Heptyl	35.69	34.09	32.49	30.40	37.29	0.0800	±0.05

TABLE 61.3. Alkyl 1-naphthyl ketones [4]

(Maximum Bubble Pressure-A)

Alkyl 1-naphthyl ketones	Surface tension[a] (±0.2)				Least squares *constants*		σ_γ
	20°	40°	60°	85 °C	*a*	*b*	
1-Acetonaphthone	46.16	43.97	41.79	39.06	48.34	0.1092	±0.12
1-Propionaphthone	43.49	41.42	39.34	36.75	45.57	0.1038	±0.07
Propyl	41.45	39.64	37.84	35.58	43.25	0.0902	±0.13
Butyl	39.31	37.73	36.16	34.19	40.88	0.0787	±0.12
Pentyl	38.56	36.94	35.33	33.31	40.17	0.0807	±0.14
Hexyl	36.47	34.90	33.32	31.36	38.04	0.0786	±0.07
Heptyl	36.77	35.31	33.85	32.02	38.23	0.0730	±0.06

TABLE 61.4. Alkylnaphthalenes, vinylnaphthalene, and naphthalene [4]

(Maximum Bubble Pressure-A)

1-Alkylnaphthalenes	Surface tension (±0.2)				Least squares constants		σ_γ
	20°	40°	60°	85 °C	*a*	*b*	
Ethyl	38.47	36.44	34.42	31.88	40.50	0.1014	±0.04
Propyl	36.70	34.85	32.99	30.68	38.55	0.0926	±0.11
Butyl	35.69	33.91	32.12	29.90	37.47	0.0891	±0.02
Pentyl	35.18	33.35	31.51	29.22	37.02	0.0918	±0.06
Hexyl	35.06	33.18	31.31	28.96	36.94	0.0939	±0.11
Heptyl	34.59	32.94	31.30	29.24	36.24	0.0824	±0.01
Octyl	34.23	32.67	31.10	29.14	35.80	0.0783	±0.03

TABLE 61.4. *Alkylnaphthalenes, vinylnaphthalene, and naphthalene [4]—Continued*

2-Alkylnaphthalenes	Surface tension (±0.2)				Least squares constants		σ_γ
	20°	40°	60°	85 °C	*a*	*b*	
Ethyl	37.10	35.08	33.07	30.54	39.12	0.1009	±0.11
Propyl	35.70	33.85	31.99	29.67	37.56	0.0928	±0.01
Butyl	35.32	33.58	31.83	29.66	37.06	0.0871	±0.06
Pentyl	34.58	32.93	31.27	29.21	36.23	0.0826	±0.03
Hexyl	33.95	32.33	30.72	28.70	35.56	0.0807	±0.03
Heptyl	33.85	32.21	30.56	28.51	35.49	0.0821	±0.05
Octyl	33.68	32.09	30.49	28.50	35.27	0.0796	±0.01

1-Vinylnaphthalene [45]

(Capillary Rise Method-A)

Surface tension (±0.40)								Least squares constants	
100°	110°	120°	130°	140°	160°	180°	200 °C	*a*	*b*
35.09	34.11	33.13	32.16	31.18	29.22	27.27	25.31	44.87	0.0987

Naphthalene [45, 46]

(Capillary Rise Method-V)

Surface tension (±1.0)							Least squares constants	
90°	100°	120°	140°	160°	180°	200 °C	*a*	*b*
32.88	31.77	29.56	27.34	25.13	22.91	20.70	42.84	0.1107

TABLE 61.5. *cis*- and *trans*-Decahydronaphthalene [199]

(Capillary Rise Method-A)

Temperature centigrade	Surface tension (±0.4)	
	cis	*trans*
−30	38.02	35.29
−20	36.83	34.14
−10	35.65	32.95
0	34.50	31.91
10	33.36	30.87
20	32.18	29.89
30	31.01	28.87
40	29.81	27.81
50	28.63	26.77
60	27.67	25.82
70	26.82	24.82
80	25.88	23.95
90	24.95	23.02
100	24.04	22.02
110	23.14	21.05
120	22.25	20.22
130	21.38	19.39
140	20.56	18.65
150	19.76	17.85
160	18.89	16.98
170	18.04	16.17
180	17.18	15.44

TABLE 61.6. Miscellaneous naphthalene compounds [4]

(Maximum Bubble Pressure-A)

Compound	Surface tension (±0.2)				Least squares constants		σ_γ
	20°	40°	60°	85 °C	*a*	*b*	
1-Fluoronaphthalene	38.21	36.05	33.88	31.17	40.38	0.1083	±0.06
1-Chloronaphthalene	42.05	39.98	37.91	35.32	44.12	0.1035	±0.01
1-Bromonaphthalene	44.40	42.37	40.33	37.79	46.44	0.1018	±0.04
1-Iodonaphthalene	47.15	44.96	42.76	40.02	49.35	0.1098	±0.13
1-Naphthonitrile	46.40	44.32	42.23	39.63	48.48	0.1041	±0.10
1,2-Dimethylnaphthalene	39.24	37.26	35.28	32.81	41.22	0.0990	±0.06
1,6-Dimethylnaphthalene	37.35	35.49	33.63	31.30	39.21	0.0930	±0.06
1-Naphthalenecaetonitrile	48.95	46.89	44.84	42.27	51.00	0.1027	±0.04
1-(Chloromethyl)naphthalene	45.46	43.45	41.45	38.94	47.47	0.1004	±0.04
1-Methoxynaphthalene	42.84	40.71	38.57	35.91	44.97	0.1066	±0.07
2-Isopropylnaphthalene	35.01	33.31	31.62	29.49	36.71	0.0849	±0.15
2-*tert*-Butylnaphthalene	34.18	32.50	30.81	28.71	35.86	0.0841	±0.12
1,2,3,4-Tetrahydronaphthalene	33.64	31.73	29.83	27.44	35.55	0.0954	±0.01

TABLE 62. Nitrobenzene and some nitro and halonitro derivatives

(Maximum Bubble Pressure)

Compound	Surface tension									Least squares constants		σ_γ
	40°	60°	80°	100°	120°	140°	160°	180°	200 °C	a	b	
Nitrobenzene[a]	41.71	39.40	37.08	34.77	32.46	30.14	27.83	25.51	23.20	46.34	0.1157	±0.30
o-Dinitrobenzene[b]	-------	-------	-------	-------	38.76	36.99	35.21	33.44	31.76	49.42	0.0888	±0.13
m-Dinitrobenzene[b]	-------	-------	-------	41.60	39.69	37.78	35.87	33.96	32.05	51.15	0.0955	±0.14
p-Dinitrobenzene[b]	-------	-------	-------	-------	38.86	37.24	35.63	34.01	32.40	48.54	0.0807	±0.09
m-Fluoronitrobenzene[b]	35.98	34.08	32.19	30.30	28.41	26.52	24.62	22.73	20.84	39.76	0.0946	±0.11
p-Fluoronitrobenzene[b]	36.57	34.44	32.32	30.19	28.06	25.94	23.81	21.69	19.56	40.82	0.1063	±0.08
o-Chloronitrobenzene[d]	43.42	41.07	38.73	36.39	34.05	31.71	29.36	27.02	-------	48.10	0.1171	±0.11
m-Chloronitrobenzene[d]	44.04	41.21	38.37	35.54	32.71	29.87	27.04	24.20	-------	49.71	0.1417	±0.52
p-Chloronitrobenzene[a]	-------	-------	-------	35.38	33.29	31.20	29.10	27.01	24.92	45.84	0.1046	±0.06
o-Bromonitrobenzene[d]	-------	42.77	40.68	38.59	36.50	34.41	32.33	30.24	-------	49.03	0.1044	±0.18
m-Bromonitrobenzene[d]	-------	42.83	40.36	37.88	35.40	32.93	30.45	27.98	-------	50.26	0.1238	±0.07
p-Bromonitrobenzene[d]	-------	-------	-------	-------	-------	33.62	31.73	29.83	27.94	46.89	0.09476	±0.13
o-Iodonitrobenzene[b]	-------	43.15	41.24	39.33	37.42	35.51	33.60	31.70	29.79	48.88	0.09547	±0.10
m-Iodonitrobenzene[b]	45.39	43.38	41.36	39.34	37.32	35.30	33.29	31.27	29.25	49.43	0.1009	±0.08
1,2-Dichloro-4-nitrobenzene[b]	-------	38.85	37.02	35.18	33.35	31.52	29.68	27.85	26.02	44.35	0.09166	±0.09
1,3-Dichloro-4-nitrobenzene[b]	40.77	38.77	36.77	34.78	32.78	30.78	28.78	26.78	24.78	44.77	0.09994	±0.05
1,4-Dichloro-2-nitrobenzene[b]	-------	38.54	36.67	34.80	32.92	31.05	29.18	27.30	25.43	44.16	0.09364	±0.12
o-Nitrotoluene[d]	39.31	36.97	34.62	32.27	29.92	27.57	25.23	-------	-------	44.01	0.1174	±0.07
m-Nitrotoluene[d]	39.07	36.83	34.60	32.36	30.12	27.89	25.65	-------	-------	43.54	0.1118	±0.07
p-Nitrotoluene[a]	-------	36.41	34.47	32.52	30.57	28.62	26.67	24.72	22.78	42.26	0.09742	±0.12
2,4,6-Trinitrotoluene[c]	-------	-------	47.09	45.09	43.14	41.16	39.19	37.21	35.23	54.99	0.09878	±0.04
m-Nitroaniline[b]	-------	-------	-------	-------	43.14	41.28	39.42	37.56	35.69	54.31	0.09308	±0.04
p-Nitroaniline[b]	-------	-------	-------	-------	-------	-------	45.86	44.01	42.17	60.62	0.09225	±0.01
1,2-Dimethoxy-4,5-dinitrobenzene[b]	-------	-------	-------	-------	-------	40.11	37.71	35.30	32.89	56.97	0.1204	±0.05
1-Chloro-2,4-dinitrobenzene[b]	-------	45.59	43.64	41.70	39.75	37.81	35.86	33.92	31.97	51.42	0.09724	±0.07
4-Chloro-1,2-dinitrobenzene[e]	12.50	9.50	6.50	-------	-------	-------	-------	-------	-------	18.50	0.1500	-------
4-Bromo-1,2-dinitrobenzene[c]	13.00	12.50	12.00	11.50	-------	-------	-------	-------	-------	14.00	0.0250	-------
N-Methyl-*p*-nitroaniline[b]	-------	-------	-------	-------	-------	-------	46.01	43.79	41.56	63.82	0.1113	±0.42
4-Nitro-*o*-toluidine[b]	-------	-------	-------	-------	-------	43.32	40.16	37.01	33.86	65.38	0.1576	-------
6-Nitro-*o*-toluidine[b]	-------	-------	-------	39.67	37.90	36.13	34.37	32.60	30.83	48.50	0.08834	±0.03
2-Nitro-*p*-toluidine[b]	-------	-------	-------	-------	36.42	34.36	32.31	30.25	28.20	48.74	0.1027	±0.10
2-Nitroresorcinol[b]	-------	-------	-------	38.45	36.26	34.06	31.87	29.67	-------	49.42	0.1097	±0.04

[a] Ref. [215] (A) (±1.0).
[b] Ref. [108] (N_2) (±2.0).
[c] Ref. [131] (A) (±0.2).
[d] Ref. [217] (A) (±1.0).
[e] Ref. [156] (Capillary Rise Method-A) (±3.0).

TABLE 63.1. Nitrous and nitric esters [250]

(Capillary Rise Method-A)

Compound	Surface tension (±0.1)						Least squares constants		σ_γ
	15°	25°	35°	45°	55°	65 °C	a	b	
Butyl nitrite	31.74	30.67	29.60	28.53	-------	-------	33.35	0.1070	±0.11
Pentyl nitrite	23.28	22.21	21.14	20.07	19.00	-------	24.89	0.1070	±0.08
Hexyl nitrite	24.36	23.35	22.35	21.35	20.34	19.34	25.86	0.1003	±0.07
Ethyl nitrate	28.79	27.45	26.10	24.76	-------	-------	30.81	0.1345	±0.03
Propyl nitrate	27.81	26.58	25.34	24.10	22.87	21.63	29.67	0.1237	±0.10
Butyl nitrate	28.66	27.53	26.41	25.28	24.16	23.03	30.35	0.1126	±0.09

TABLE 63.2. α,ω-Alkane dinitric esters [266]

(Maximum Bubble Pressure Method-A)

Compound	Surface tension (±0.15)						Least squares constants	
	0°	10°	15°	25°	35°	45 °C	*a*	*b*
Ethylene nitrate	49.1					46.7		
Propylene nitrate	48.8	47.2	46.4	44.8	43.3	41.7	48.8	0.1575
Tetramethylene nitrate	46.2	45.0	44.4	43.2	42.0	40.8	46.2	0.1199
Pentamethylene nitrate	45.6	45.3	43.7	42.4	41.2	39.9	45.6	0.1270
Hexamethylene nitrate	43.1	42.2	41.6	40.7	39.8	38.8	43.1	0.0950
Heptamethylene nitrate	42.0	41.1	40.6	39.6	38.7	37.7	42.0	0.0964
Octamethylene nitrate	40.6	39.8	39.4	38.6	37.8	37.0	40.6	0.0794
Nonamethylene nitrate	40.4	39.6	39.2	38.4	37.5	36.7	40.4	0.0816
Decamethylene nitrate	39.6	38.9	38.6	37.9	37.3	36.6	39.6	0.0671

TABLE 64. Nicotine [197]

(Capillary Rise Method-A)

Surface tension (±0.5)													Least squares constants	
−40°	−30°	−20°	−10°	10°	20°	30°	40°	50°	60°	70°	80°	90 °C	*a*	*b*
45.52	44.41	43.29	42.19	39.96	38.85	37.73	36.62	35.51	34.40	33.29	32.17	31.06	41.07	0.1112

TABLE 65. Nickel carbonyl [127]

(Capillary Rise Method-A)

Surface tension (±0.10)							Least squares constants		σ_γ
5°	10°	15°	20°	25°	30°	35 °C	*a*	*b*	
17.55	16.99	16.43	15.88	15.32	14.76	14.20	18.11	0.1117	±0.01

TABLE 66. Nitroparaffins and trichloronitromethane

Nitroparaffins [206]

(Maximum Bubble Pressure-A)

Compound	Surface tension (±0.1)									Least squares constants		σ_γ
	10°	20°	30°	40°	50°	60°	70°	80°	90 °C	a	b	
Nitromethane	39.12	37.48	35.47	34.02	32.34	30.72	28.97	-------	-------	40.72	0.1678	±0.06
Nitroethane	33.88	32.66	31.50	30.24	28.95	27.83	26.49	-------	-------	35.27	0.1255	±0.06
1-Nitropropane	31.68	30.64	29.61	28.48	27.66	26.53	25.56	-------	-------	32.62	0.1009	±0.06
2-Nitropropane	31.08	29.87	28.68	27.54	26.41	25.22	24.07	-------	-------	32.18	0.1158	±0.06
1-Nitrobutane	30.80	29.77	28.68	27.98	26.99	26.02	25.03	-------	-------	31.74	0.0959	±0.06
2-Nitrobutane	30.62	29.53	28.44	27.36	26.28	25.19	24.11	-------	-------	31.70	0.1085	±0.06
1-Nitropentane[a]	30.26	29.31	28.36	27.41	26.46	25.51	24.57	23.62	22.67	31.21	0.09492	±0.07
1-Nitrohexane[a]	30.42	29.54	28.67	27.79	26.91	26.03	25.16	24.28	23.40	31.30	0.08777	±0.10
2-Methyl-1-nitropropane	29.42	28.37	27.49	26.52	25.56	24.60	23.64	-------	-------	30.35	0.0958	±0.06
2-Methyl-2-nitropropane	-------	-------	27.38	26.33	25.29	24.26	-------	-------	-------	30.48	0.1038	±0.06

[a] Ref. [250] (Capillary Rise Method-A) (±0.10).

Trichloronitromethane [192]

(Capillary Rise Method-A)

Surface tension (±0.6)											Least squares constants		σ_γ
−10°	10°	20°	30°	40°	50°	60°	70°	80°	90°	100 °C	a	b	
36.32	33.66	32.34	31.01	29.69	28.36	27.03	25.71	24.38	23.06	21.73	34.99	0.1326	±0.03

TABLE 67.1. Trialkyl phosphites and tris(2-alkoxyethyl) phosphites [65]

(Maximum Bubble Pressure Method-A)

Trialkyl phosphites	Surface tension (±0.15)				Least squares constants		σ_γ
	20°	40°	60°	85 °C	a	b	
Methyl	27.18	24.88	-------	-------	-------	-------	±0.00
Ethyl	23.95	22.20	20.46	18.27	25.73	0.0878	±0.11
Propyl	25.06	23.29	21.52	19.31	26.83	0.0885	±0.02
Butyl	25.84	24.11	22.38	20.22	27.57	0.0865	±0.20
Pentyl	26.92	25.23	23.55	21.44	28.61	0.0844	±0.13
Hexyl	27.54	25.93	24.31	22.31	29.15	0.0805	±0.01
Heptyl	28.15	26.56	24.98	23.00	29.73	0.0792	±0.07
Octyl	28.31	26.81	25.32	23.44	29.81	0.0749	±0.12

TABLE 67.1. Trialkyl phosphites and tris(2-alkoxyethyl) phosphites [65]—Continued

(Maximum Bubble Pressure Method-A)

Tris(2-alkoxyethyl)phosphites	Surface tension (±0.15)				Least squares constants		σ_γ
	20°	40°	60°	85 °C	a	P	
Methoxy	33.94	31.89	29.84	27.28	35.99	0.1025	±0.02
Ethoxy	30.62	28.71	26.80	24.41	32.53	0.0955	±0.09
Propoxy	28.94	27.35	25.77	23.78	30.53	0.0794	±0.08
Butoxy	29.33	27.71	26.10	24.08	30.94	0.0807	±0.08
Pentoxy	29.62	27.90	26.19	24.05	31.33	0.0857	±0.04
Hexoxy	29.91	28.22	26.52	24.41	31.60	0.0846	±0.07

TABLE 67.2. Phosphonates [65]*

(Maximum Bubble Pressure Method-A)

Dialkyl phosphonates	Surface tension (±0.15)				Least squares constants		σ_γ
	20°	40°	60°	85 °C	a	b	
Methyl	37.58	35.21	32.84	29.88	39.95	0.1185	±0.05
Ethyl	30.96	28.88	26.79	24.18	33.05	0.1043	±0.08
Propyl	29.25	27.43	25.61	23.33	31.07	0.0910	±0.04
Butyl	28.24	26.80	25.36	23.56	29.68	0.0720	±0.04
Pentyl	28.51	26.90	25.30	23.29	30.11	0.0802	±0.05
Hexyl	28.73	27.19	25.66	23.74	30.26	0.0767	±0.05
Heptyl	28.72	27.27	25.83	24.02	30.16	0.0722	±0.08
Octyl	28.97	27.57	26.16	24.41	30.38	0.0703	±0.03

Bis(2-alkoxyethyl)phosphonates	Surface tension (±0.15)				Least squares constants		σ_γ
	20°	40°	60°	85 °C	a	b	
Methoxy	37.87	35.80	33.74	31.16	39.93	0.1032	±0.20
Ethoxy	33.96	31.82	29.69	27.01	36.10	0.1069	±0.19
Propoxy	30.97	29.64	28.30	26.64	32.30	0.0666	±0.18
Butoxy	30.96	29.90	28.83	27.51	32.02	0.0531	±0.15
Pentoxy	30.94	29.61	28.28	26.62	32.27	0.0665	±0.17
Hexoxy	31.18	29.82	28.45	26.74	32.54	0.0682	±0.02
Heptoxy	30.95	29.52	28.08	26.29	32.38	0.0716	±0.11

TABLE 67.2. Phosphonates [65]—Continued

(Maximum Bubble Pressure Method-A)

Dialkyl ethylphosphonates	Surface tension (±0.15)				Least squares constants		σ_γ
	20°	40°	60°	85 °C	a	b	
Methyl	36.63	34.10	31.58	28.42	39.15	0.1262	±0.13
Ethyl	28.68	26.73	24.78	22.34	30.63	0.0975	±0.00
Propyl	28.25	26.45	24.66	22.41	30.05	0.0899	±0.10
Butyl	28.05	26.40	24.76	22.70	29.70	0.0824	±0.03
Pentyl	27.97	26.34	24.71	22.67	29.60	0.0815	±0.09
Hexyl	28.07	26.70	25.32	23.60	29.45	0.0688	±0.10
Heptyl	28.47	27.08	25.68	23.93	29.87	0.0699	±0.03
Octyl	28.99	27.25	25.52	23.34	30.73	0.0869	±0.28

Dipropyl alkylphosphonates	Surface tension (±0.15)				Least squares constants		σ_γ
	20°	40°	60°	85 °C	a	b	
Methyl	28.57	26.75	24.94	22.66	30.39	0.0909	±0.07
Propyl	27.97	26.19	24.41	22.18	29.75	0.0890	±0.03
Butyl	28.02	26.26	24.50	22.30	29.78	0.0880	±0.06
Pentyl	28.20	26.49	24.77	22.63	29.92	0.0858	±0.09
Hexyl	28.06	26.62	25.17	23.36	29.51	0.0723	±0.03
Heptyl	28.54	26.88	25.22	23.14	30.20	0.0830	±0.04
Octyl	28.77	27.06	25.36	23.23	30.47	0.0852	±0.06

TABLE 67.3. Orthophosphates [65]

(Maximum Bubble Pressure Method-A)

Orthophosphates	Surface tension (±0.15)				Least squares constants		σ_γ
	20°	40°	60°	85 °C	a	b	
Butyl	27.38	26.05	24.71	23.05	28.71	0.0666	±0.19
Pentyl	26.87	25.88	24.88	23.63	27.87	0.0498	±0.23
Hexyl	28.05	26.56	25.06	23.20	29.54	0.0746	±0.05
Heptyl	28.04	26.67	25.29	23.57	29.42	0.0688	±0.09
2-Methoxyethyl	36.61	34.61	32.61	30.11	38.61	0.1000	±0.05
2-Ethoxyethyl	32.20	30.41	28.63	26.40	33.98	0.0892	±0.06

Trialkyl orthophosphates [237]

(Capillary Rise Method-A)

Orthophosphate	Surface tension (±0.10)											Least squares constants		σ_γ
	15°	20°	30°	40°	50°	60°	70°	80°	90°	100°	120 °C	a	b	
Trimethyl	38.05	37.48	36.34	35.21	34.07	32.93	31.80	30.66	29.53	28.39	26.12	39.75	0.1136	±0.04
Triethyl	30.42	29.95	29.03	28.10	27.17	26.24	25.31	24.39	23.46	22.53	20.67	31.81	0.0928	±0.14
Tripropyl	29.53	29.08	28.18	27.29	26.39	25.50	24.60	23.71	22.81	21.92	20.13	30.87	0.0895	±0.11
Tributyl	25.56	25.14	24.32	23.50	22.67	21.85	21.03	20.21	19.38	18.56	16.91	26.79	0.0823	±0.17
Triisopropyl	28.35	27.96	27.18	26.39	25.61	24.83	24.04	23.26	22.47	21.69	20.12	29.53	0.0784	±0.23
Triisobutyl	26.80	26.40	25.61	24.81	24.01	23.21	22.41	21.62	20.82	20.02	18.42	28.00	0.0798	±0.11

TABLE 67.4. Dioxaphospholanes [65]

(Maximum Bubble Pressure Method-A)

2-Alkoxy-4-methyl-1,2,3-dioxaphospholanes	Surface tension (±0.15)				Least squares constants		σ_γ
	20°	40°	60°	85 °C	a	b	
Methoxy	29.65						
Ethoxy	27.75	26.08	24.42	22.34	29.41	0.0832	±0.00
Propoxy	28.06	26.64	25.22	23.44	29.48	0.0710	±0.07
Butoxy	28.32	26.53	24.73	22.49	30.11	0.0896	±0.03
Pentoxy	28.24	26.77	25.31	23.48	29.70	0.0732	±0.14
Hexoxy	28.39	26.83	25.26	23.30	29.96	0.0783	±0.08

TABLE 68. Palladium and mercury complex compounds [145]

(Max. Bubble Pressure-A)

Compound	Surface tension (±0.1)															Least squares constants		σ_γ
	20°	30°	40°	50°	60°	70°	80°	90°	100°	110°	120°	130°	140°	150°	160 °C	a	b	
Bis(dimethyl sulfide)—palladium dichloride													43.70	43.14	42.58	51.57	0.0562	±0.01
Bis(diethyl sulfide)—palladium dichloride								38.83	37.99	37.15	36.30	35.46				46.43	0.08439	±0.16
Bis(dipropyl sulfide)—palladium dichloride					35.49	34.58	33.67	32.77	31.86	30.95	30.05					40.93	0.0907	±0.29
Bis(dibutyl sulfide)—palladium dichloride				33.07	32.30	31.53	30.76	29.99	29.22							36.92	0.07698	±0.02
Bis(diisobutyl sulfide)—palladium dichloride								28.70	28.06	27.42	26.77	26.13				34.50	0.0644	±0.08
Bis(dipentyl sulfide)—palladium dichloride				30.78	30.06	29.34	28.62	27.90	27.18	26.46						34.39	0.0721	±0.05
Bis(tripropyl phosphine)—palladium dichloride								28.14	27.39	26.65	25.90	25.16	24.41	23.66	22.92	34.86	0.07465	±0.01
Bis(tributyl phosphine)—palladium dichloride						27.93	27.20	26.48	25.76	25.04	24.32	23.59	22.87	22.15	21.43	32.98	0.0722	±0.07
Bis(tributyl phosphine)—palladium dibromide						28.77	27.86	26.94	26.03							35.17	0.0914	±0.01
Bis(triethylarsine)—palladium dichloride											30.81	30.02	29.23	28.43	27.64	40.33	0.0793	±0.01
Bis(tripropylarsine)—palladium dichloride					31.03	30.26	29.49	28.72	27.95	27.18						35.66	0.0771	±0.01
Bis(tributylarsine)—palladium dichloride					28.82	28.16	27.50	26.84	26.18	25.52						32.77	0.0659	±0.01
Bi(tripentylarsine)—palladium dichloride	31.38	30.66	29.95	29.24	28.53	27.82	27.10	26.39	25.68	24.97						32.80	0.0712	±0.50
Bis(tripropylarsine)—palladium dibromide				32.57	31.73	30.90	30.06	29.23								36.75	0.0836	±0.10
Dipentyl sulfide—palladium								26.82	25.98	25.14	24.31	23.47				34.34	0.0836	±0.02
Diethyl sulfide—mercury						37.65	37.03	36.41	35.79							41.98	0.0619	±0.01
Dipropyl sulfide—mercury						31.09	30.55	30.02	29.49							34.81	0.0532	±0.01
Dipentyl sulfide—mercury						26.86	26.32	25.79	25.25							30.61	0.0536	±0.01
Dihexyl sulfide—mercury						25.96	25.39	24.83	24.26							29.93	0.0567	±0.01

Diheptyl sulfide—mercury						25.28	24.84	24.41	23.98							28.30	0.0432	±0.01
Dioctyl sulfide—mercury						25.39	24.91	24.44	23.96							28.73	0.0477	±0.01

TABLE 69.1. Phenyl sulfide and selenide [237]

	Surface tension (±0.10)										Least squares constants		σ_γ
	20°	30°	40°	50°	60°	70°	80°	90°	100°	120 °C	a	b	
Phenyl sulfide	24.25	41.26	40.26	39.27	38.28	37.28	36.29	35.29	34.30	32.31	44.24	0.0994	±0.12
Phenyl selenide	43.63	42.63	41.62	40.61	39.60	38.59	37.59	36.58	35.57	33.55	45.64	*0.1008*	±0.22

TABLE 69.2. Phenyl compounds and related compounds

Phenyl compounds [245]

(Capillary Rise Method-A)

Compound	Surface tension (±0.1)									Least squares constants		σ_γ
	15°	20°	30°	40°	50°	60°	70°	80°	90 °C	a	b	
Methyl benzoate	38.34	37.76	36.59	35.42	34.24	33.07	31.90	30.73	29.56	40.10	0.1171	±0.09
Ethyl benzoate	35.57	35.04	33.98	32.92	31.86	30.81	29.75	28.69	27.63	37.16	0.1059	±0.08
Propyl benzoate	34.95	34.41	33.34	32.27	31.20	30.14	29.07	28.00	26.93	36.55	0.1069	±0.16
Butyl benzoate	-------	33.67	32.70	31.74	30.78	29.82	28.86	27.89	26.93	35.59	0.0962	±0.07
Methyl phenylacetate	38.70	38.32	36.95	35.79	34.62	33.45	32.29	31.12	29.96	40.45	*0.1166*	*±0.10*
Ethyl phenylacetate	35.90	35.36	34.26	33.16	32.06	30.97	29.87	28.77	27.68	37.55	0.1097	±0.08
Propyl phenylacetate	34.79	34.29	33.28	32.27	31.25	30.24	29.23	28.22	27.21	36.31	0.1011	±0.07
Butyl phenylacetate	-------	33.33	32.35	31.38	30.40	29.43	28.45	27.48	26.50	35.28	0.0975	±0.02
Methyl hydrocinnamate	37.97	37.30	36.30	35.19	34.07	32.96	31.85	30.74	29.62	39.64	0.1113	±0.04
Ethyl hydrocinnamate	-------	35.02	33.19	32.95	31.92	30.89	29.85	28.82	27.78	37.09	0.1034	±0.05
Propyl hydrocinnamate	-------	34.17	33.13	32.09	31.05	30.02	28.98	27.94	26.91	36.24	0.1037	±0.07
Butyl hydrocinnamate	-------	33.49	32.56	31.62	30.69	29.76	28.82	27.89	26.95	35.36	0.0934	±0.05
1-Methylnaphthalene	38.56	38.09	37.16	36.22	35.29	34.36	33.42	32.49	31.55	39.96	0.0934	±0.03

Phenyl salicylate [8]

(Capillary Rise Method-A)

Surface tension (±0.10)							Least squares constants	
30°	35°	40°	45°	50°	55°	60 °C	a	b
42.27	41.78	41.30	40.81	40.32	39.83	39.34	45.20	0.0976

TABLE 69.3. Triphenyl compounds of group V_B elements [62]

(Capillary Rise-A)

Compound	Surface tension (±0.1)										Least squares constants		σ_γ
	65°	75°	85°	100°	125°	150°	175°	200°	225°	250 °C	a	b	
Triphenylamine	------	------	------	------	34.3	31.9	29.5	27.1	24.7	--------	46.2	0.0955	±0.2(
Triphenylphosphine	------	------	37.4	36.0	33.8	31.5	29.3	27.0	24.7	--------	45.1	0.0905	±0.10
Triphenylbismuthine	------	------	36.4	34.9	32.4	29.8	27.2	24.7	------	--------	45.1	0.1020	±0.10
Triphenylarsine	40.1	39.1	38.1	36.8	34.5	32.2	30.0	27.7	25.4	23.1	45.9	0.0913	±0.30
Triphenylstibine	39.1	38.2	37.4	36.0	33.9	31.7	29.5	27.3	25.1	22.9	44.8	0.0875	±0.10

TABLE 69.4. Biphenyl [83]

(Capillary Rise Method-A)

Surface tension (±0.40)								Least squares constants	
80°	90°	100°	120°	140°	160°	180°	200 °C	a	b
34.07	33.14	32.21	30.35	28.49	26.63	24.77	22.91	41.52	0.09307

TABLE 70. Phenol and nitro derivatives

(Maximum Bubble Pressure-A)

Compound	Surface tension									Least squares constants		σ_γ
	40°	50°	60°	80°	100°	120°	140°	160°	180 °C	a	b	
Phenol[a]	39.27	38.20	37.13	35.00	32.86	30.72	28.59	-------	-------	43.54	0.1068	±0.05
o-Nitrophenol[b]	-------	41.48	40.31	37.96	35.61	33.26	30.91	28.57	26.22	47.35	0.1174	±0.30
m-Nitrophenol[b]	-------	-------	-------	-------	42.88	41.55	40.21	38.88	37.54	49.56	9.06675	±0.20
p-Nitrophenol[b]	-------	-------	-------	-------	-------	45.95	44.31	42.68	41.05	55.74	0.08161	±0.25
2,4-Dinitrophenol[c]	-------	-------	-------	-------	-------	-------	39.86	38.03	36.20	52.67	0.09151	±0.14
p-Nitroanisole[d]	-------	-------	42.40	40.50	38.61	36.72	34.82	32.93	31.03	48.08	0.0947	±0.10
o-Nitroanisole[e]	43.88	42.69	41.51	39.14	36.77	34.40	32.03	29.66	27.29	48.62	0.1185	±0.19

[a] Ref. [8] (Capillary Rise Method) (±0.1).
[b] Ref. [27] (±0.5).
[c] Ref. [108] (N_2) (±2.0).
[d] Ref. [200] (±1.0).
[e] Ref. [28] (±0.1).

TABLE 71. Polymethylene dicyanides [81]

(Maximum Bubble Pressure Method-A)

Compound	Surface tension (±0.15)				Least squares constants		σ_γ
	20°	40°	60°	85 °C	a	b	
Glutaronitrile	48.11	46.02	43.95	41.33	50.20	0.1044	±0.01
Adiponitrile	45.93	43.99	42.04	39.61	47.88	0.0973	±0.01
Pimelonitrile	44.75	42.70	40.66	38.10	46.80	0.1024	±0.01
Suberonitrile	43.81	41.80	39.78	37.26	45.83	0.1008	±0.01
Azelaonitrile	42.83	40.78	38.73	36.17	44.88	0.1025	±0.02

TABLE 72. Polymethylene dihalides [81]

(Maximum Bubble Pressure-A)

Dichlorides	Surface tension (±0.15)				Least squares constants		σ_γ
	20°	40°	60°	85 °C	a	b	
Dichloromethane[a]	27.84	25.27			30.41	0.1284	±0.05
1,1-Dichloroethane[a]	24.66	22.29			27.03	0.1186	±0.05
1,2-Dichloroethane[b]	32.57	29.72	26.86	23.29	35.43	0.1428	±0.02
1,2-Dichloropropane[b]	28.94	26.46	23.98	20.88	31.42	0.1240	±0.02
1,3-Dichloropropane	33.93	31.47	29.00	25.92	36.40	0.1233	±0.01
1,4-Dichlorobutane	35.42	33.07	30.73	27.77	37.79	0.1174	±0.01
1,5-Dichloropentane	35.75	33.44	31.14	28.25	38.06	0.1154	±0.04
1,6-Dichlorohexane	35.99	33.68	31.34	28.43	38.32	0.1163	±0.02
1,7-Dichloroheptane	36.03	33.85	31.67	28.92	38.22	0.1094	±0.02
1,8-Dichloro-octane	36.11	34.00	31.90	29.26	38.22	0.1055	±0.01
1,9-Dichlorononane	36.51	34.46	32.41	29.86	38.56	0.1025	±0.01

Dibromides	Surface tension (±0.15)				Least squares constants		σ_γ
	20°	40°	60°	85 °C	a	b	
Dibromethane[a]	39.79	36.82	33.84[17]	30.12	42.77	0.1488	±0.10
1,1-Dibromethane[a]	33.68	31.08	28.49	25.24	36.28	0.1299	±0.02
1,2-Dibromoethane	40.21	37.57	34.93	31.63	42.85	0.1320	±0.04
1,2-Dibromopropane[b]	34.50	32.19	29.88	26.99	36.81	0.1155	±0.02
1,3-Dibromopropane	39.93	37.53	35.13	32.13	42.33	0.1200	±0.01
1,4-Dibromobutane	40.86	38.48	36.10	33.12	43.24	0.1190	±0.01
1,5-Dibromopentane	40.56	38.30	36.02	33.20	42.83	0.1133	±0.00
1,6-Dibromohexane	40.33	38.13	35.92	33.16	42.53	0.1102	±0.01
1,7-Dibromoheptane	40.28	38.11	35.96	33.26	42.44	0.1080	±0.00
1,8-Dibromo-octane	39.84	37.74	35.63	33.00	41.95	0.1053	±0.00
1,9-Dibromononane	39.55	37.49	35.44	32.87	41.60	0.1027	±0.01

TABLE 72. Polymethylene dihalides [81]—Continued

(Maximum Bubble Pressure-A)

Diiodides	Surface tension (±0.15)				Least squares constants		σ_γ
	20°	40°	60°	85 °C	a	b	
Diiodomethane	66.98	63.76	60.53	56.50	70.21	0.1613	±0.02
1,3-Diiodopropane	47.87	45.49	43.09	40.10	50.26	0.1195	±0.01
1,4-Diiodobutane	47.08	44.79	42.49	39.63	49.37	0.1146	±0.01
1,5-Diiodopentane	45.54	43.35	41.17	38.44	47.72	0.1092	±0.02
1,6-Diiodohexane	44.49	42.19	39.89	37.00	46.80	0.1153	±0.01
1,7-Diiodoheptane	43.93	41.74	39.55	36.81	46.12	0.1095	±0.01
1,8-Diiodo-octane	43.25	41.17	39.09	36.49	45.33	0.1040	±0.01
1,9-Diiodononane	42.51	40.53	38.54	36.06	44.50	0.0993	±0.02

[a] Ref. [250].

[b] Ref. [244] (±0.1).

TABLE 73.1. Heterocyclic nitrogen containing compounds

Compound	Surface tension										Least squares constants		σ_γ
	10°	20°	30°	40°	50°	60°	70°	80°	90°	100 °C	a	b	
Pyrrole[a]	38.71	37.61	36.51	35.41	34.31	33.21	21.11	------	------	------	39.81	0.1100	±0.08
Pyrrolidine[a]	30.58	29.65	28.80	27.88	26.98	26.08	25.18	------	------	------	31.48	0.0900	±0.08
Pyrimidine[b]	------	30.83	29.82	28.81	27.80	26.79	25.78	24.77	23.76	22.75	32.85	0.1010	±0.10
Pyridazine[c]	49.51	48.48	47.44	46.41	45.37	44.33	43.30	42.26	41.23	40.19	50.55	0.1036	±0.12
Quinoline[d]	44.19	43.12	42.06	41.00	39.93	38.87	37.81	36.75	35.68	34.62	45.25	0.1063	±0.15
Piperidine[e]	30.64	29.48	28.33	27.18	26.02	24.87	23.72	22.57	21.41	20.26	31.79	0.1153	±0.10

[a] Ref. [90] (Maximum Bubble Pressure-N_2) (±0.15).

[b] Ref. [104] (Maximum Bubble Pressure-A) (±0.15).

[c] Ref. [103] (Capillary Rise Method-A) (±0.1).

[d] Ref. [179] (Capillary Rise Method-A) (±0.3).

[e] Ref. [177] (Capillary Rise Method-A) (±0.2).

TABLE 73.2. Pyridinealdehydes and pyridinemethanols [126]

(Maximum Bubble Pressure Method-A)

Compound	Surface tension (±0.15)				Least squares constants		σ_γ
	20°	40°	60°	85 °C	a	b	
Picolinaldehyde	41.53	39.22	36.94	34.07	43.82	0.1147	±0.00
Nicotinaldehyde	46.54	44.02	41.49	38.34	49.06	0.1261	±0.03
Isonicotinaldehyde	48.66	46.06	43.47	40.22	51.26	0.1299	±0.04
2-Pyridinemethanol	47.28	45.04	42.81	40.01	49.52	0.1119	±0.02
3-Pyridinemethanol	49.73	47.40	45.06	42.14	52.07	0.1168	±0.04

TABLE 74. Rhenium oxychlorides [23]

(Diff. Cap. Rise-A)

Compound	Surface tension (±0.1)						Least squares constants		σ_γ
	10°	20°	30°	40°	50°	60 °C	a	b	
Rhenium dioxytrichloride				47.06	44.57	42.01	57.00	0.2485	±0.54
Rhenium trioxymonochloride	52.06	50.08	48.10	46.12			54.04	0.1979	±0.33

TABLE 75. Organosilicon compounds I [149]

(Differential Capillary Rise-A)

Compound	Surface tension (±0.10)					Least squares constants		σ_γ
	25°	30°	35°	40°	45 °C	a	b	
Trimethylphenylsilane	24.29	23.89	23.49	23.11	22.72	26.25	0.0785	±0.05
Dimethyldiphenylsilane	32.47	32.03	31.59	31.15	30.71	34.67	0.0880	±0.05
Bromotrimethylsilane	19.85	19.32	18.78	18.25	17.71	22.53	0.1070	±0.06
Bromodimethylphenylsilane	28.30	27.95	27.59	27.24	26.88	30.08	0.0710	±0.11
Dibromodimethylsilane	24.57	24.12	23.67	23.22	22.77	26.83	0.0903	±0.03
Bromodiethylmethylsilane	23.55	23.13	22.71	22.29	21.87	25.65	0.0840	±0.06

Organosilicon compounds II [148]

(Differential Capillary Rise-A)

Compound	Surface tension (±0.10)						Least squares constants		σ_γ
	15°	20°	25°	30°	35°	40 °C	a	b	
Tetraethyl silicate	22.34	21.67	21.18	20.69			23.63	0.09787	±0.10
Tetrapropyl silicate	24.01	23.58	23.14	22.71			25.31	0.08673	±0.12
Hexamethyldisiloxane	15.86	15.48	15.10	14.72			17.01	0.07634	±0.09
Octamethylcyclotetrasiloxane	18.97	18.57	18.16	17.76			20.19	0.08105	±0.13
Decamethylcyclopentasiloxane	18.71	18.43	18.15	17.87			19.56	0.05647	±0.10
Tetramethylsilane		12.85							±0.07
Tetraethylsilane	23.60	23.06	22.52	21.98	21.44	20.91	25.22	0.10786	±0.04
Chlorotrimethylsilane		17.76	17.32	16.88	16.45	16.01	19.51	0.0875	±0.10

TABLE 75. Organosilicon compounds III [144]—Continued

Organosilicon compounds III [144]

(Differential Capillary Rise-A)

Compound	Surface tension (±0.10)				Least squares constants		σ_γ
	10°	15°	20°	25 °C	a	b	
Trichlorosilane	19.35	18.82	18.27	17.74	20.43	0.1076	±0.06
Dichloroethylsilane	22.92	22.31	21.70	21.09	24.14	0.1220	±0.05
Chlorodiethylsilane	23.36	22.83	22.30	21.77	24.42	0.1060	±0.05
Triethylsilane	21.49	21.10	20.71	20.32	22.27	0.0780	±0.06
Triethoxysilane	22.15	21.70	21.25	20.80	23.05	0.0900	±0.08

TABLE 76. Substituted phenols and anisoles

Compound	Surface tension											Least squares constants		σ_γ
	25°	40°	60°	80°	100°	120°	130°	140°	150°	170°	180 °C	a	b	
o-Chlorophenol [a]	39.7	38.0	35.8	33.5	31.3	29.0	27.9	26.8	25.7	23.4	-------	42.5	0.1122	--------
m-Chlorophenol [c]	-------	39.7	37.6	35.6	33.6	31.6	30.6	29.6	28.6	26.6	25.5	43.7	0.1009	±0.11
p-Chlorophenol [a]	-------	41.8	39.7	37.6	35.5	33.4	32.4	31.3	30.3	28.2	27.1	46.0	0.1049	--------
m-Bromophenol [c]	-------	41.9	40.0	38.1	36.2	34.3	33.3	32.4	31.4	29.5	28.5	45.69	0.09528	±0.04
p-Bromophenol [c]	-------	-------	-------	40.3	38.2	36.0	35.0	33.9	32.8	30.7	29.5	48.88	0.1070	--------
o-Chloranisole [a]	38.6	36.8	34.5	32.1	29.8	27.4	26.3	25.1	23.9	21.6	20.4	41.5	0.1171	--------
p-Chloranisole [a]	46.3	44.7	42.6	40.4	38.3	36.1	35.1	34.0	32.9	30.8	29.7	49.0	0.1073	--------
o-Cresol [f]	36.90	35.39	33.36	31.34	29.32	27.30	26.29	25.28	24.26	22.24	21.23	39.43	0.1011	±0.04
m-Cresol [f]	35.69	34.31	32.46	30.61	28.76	26.92	25.99	25.07	24.14	22.30	21.37	38.00	0.09237	±0.06
p-Cresol [c]	-------	34.88	33.02	31.17	29.32	27.47	26.54	25.61	24.69	22.83	21.91	38.58	0.09262	±0.04
Pyrocatechol [b]	-------	-------	-------	-------	39.1	37.4	36.6	35.7	34.9	33.2	32.3	47.6	0.0849	--------
Resorcinol [b]	-------	-------	-------	-------	47.6	46.2	45.5	44.8	44.0	42.6	41.9	54.8	0.0717	--------
Guaiacol [b]	-------	37.4	35.5	33.7	31.8	29.9	28.9	28.0	27.1	25.2	24.2	41.2	0.0943	--------
m-Methoxyphenol [b]	42.2	41.0	39.3	37.7	36.1	34.5	33.7	32.8	32.0	30.4	29.6	44.2	0.0811	--------
p-Methoxyphenol [b]	-------	-------	39.9	38.3	36.7	35.1	34.3	33.4	32.6	31.0	30.2	44.8	0.0811	--------
Veratrole [b]	32.8	31.8	30.5	29.3	28.0	26.7	26.1	25.4	24.8	23.5	22.8	34.4	0.0642	--------
m-Dimethoxybenzene [b]	33.9	32.8	31.3	29.8	28.2	26.7	26.0	25.2	24.5	23.0	22.2	35.8	0.0755	--------
p-Dimethoxybenzene [b]	-------	-------	32.5	30.8	29.0	27.3	26.4	25.5	24.7	22.9	22.1	37.7	0.0868	--------
2,4-Dichlorophenol [d]	-------	41.71	39.26	36.82	34.38	31.94	30.72	29.50	28.27	25.83	24.61	46.59	0.1221	±0.01
2,4,5-Trichlorophenol [d]	-------	-------	41.35	39.11	36.87	34.63	33.51	32.39	31.27	29.03	27.91	48.07	0.1120	±0.02
2,4,6-Trichlorophenol [e]	-------	-------	-------	35.49	34.53	33.58	31.67	29.75	28.80	26.89	25.93	43.13	0.09554	±0.27
4,4-Azoxydianisole [g]	-------	-------	-------	-------	-------	38.31	37.49	36.67	35.86	34.22	33.40	48.12	0.08175	±0.04

[a] Ref. [139] (Maximum Bubble Pressure-A) (±0.10).
[b] Ref. [137] (Maximum Bubble Pressure-A) (±0.10).
[c] Ref. [93] (Capillary Rise Method-A) (±0.4).
[d] Ref. [8] (Capillary Rise Method) (±0.10).
[e] Ref. [103] (Maximum Bubble Pressure-N_2) (±2.0).
[f] Ref. [179] (Capillary Rise Method-V) (±0.3).
[g] Ref. [183] (Capillary Rise Method-A) (±0.2).

TABLE 77.1. *Benzylated phenol derivatives [54]*

(Drop-weight Method-A)

Compound	Surface tension (±0.10)					Least squares constants		σ_γ
	20°	30°	40°	50°	60 °C	*a*	*b*	
Benzyl *o*-chlorophenyl ether	42.16	41.14	40.13	39.12	38.11	44.18	0.1012	±0.03
o-Chlorobenzyl phenyl ether	42.31	41.23	40.15	39.07	37.99	44.47	0.1080	±0.05
2-Chloro-α-phenyl-*p*-cresol	44.20	43.19	42.17	41.16	40.15	46.23	0.1014	±0.04
α-(*o*-Chlorophenyl)-*p*-cresol	43.63	42.89	42.15	41.40	40.66	45.12	0.0743	±0.07
α-(*o*-Chlorophenyl)-*p*-cresol benzoate	42.88	42.24	41.61	40.98	40.35	44.14	0.0632	±0.06
4,6-Dibenzyl-*o*-cresol	42.71	42.06	41.42	40.77	40.12	44.00	0.0646	±0.05
2,6-Dibenzyl-*m*-cresol	39.57	39.09	38.61	38.12	37.64	40.53	0.0481	±0.05
2,6-Dibenzyl-*p*-cresol	40.89	40.34	39.79	39.24	38.69	41.99	0.0550	±0.05
6-Benzyl-2-phenylphenol	44.12	43.24	42.36	41.48	40.61	45.87	0.0877	±0.04
4-Benzyl-2-phenylphenol	44.13	43.41	42.68	41.96	41.24	45.58	0.0724	±0.04
6-Benzyl-4-bromo-2-phenylphenol	---	44.10	43.36	42.62	41.88	46.32	0.0740	±0.00
4-Benzyl-6-bromo-2-phenylphenol	---	43.94	43.01	42.24	42.07	44.87	0.0466	±0.00
o-Hydroxy-1,1-diphenylbutane	37.76	37.01	36.27	35.52	34.77	39.25	0.0746	±0.07

TABLE 77.2 Higher phenols [106]

(Maximum Bubble Pressure Method-A)

Compound	Surface tension (±0.20)											Least squares constants		σ_γ
	40°	45°	55°	65°	75°	85°	95°	100°	120°	140°	160 °C	a	b	
3,4-Xylenol	------	------	------	------	28.92	28.01	27.10	26.65	24.83	23.01	21.19	35.75	0.0910	±0.07
2,4-Xylenol	31.10	30.66	29.79	28.92	28.06	27.19	26.32	25.88	24.15	22.41	20.67	34.57	0.08685	±0.21
3,5-Xylenol	------	------	------	------	28.04	27.23	26.43	26.02	24.41	22.80	21.18	34.09	0.08066	±0.07
2,5-Xylenol	------	------	------	------	------	29.49	28.64	28.22	26.52	24.82	23.12	36.72	0.0850	±0.19
Thymol	------	------	29.43	28.61	27.79	26.97	26.15	25.74	24.10	22.45	20.81	33.95	0.08212	±0.01
5,6,7,8-Tetrahydro-1-naphthol	------	------	------	------	38.42	37.38	36.34	35.82	33.75	31.68	30.60	46.19	0.10366	±0.24
5,6,7,8-Tetrahydro-2-naphthol	------	------	------	38.90	38.17	37.45	36.72	36.35	34.90	33.44	31.99	43.63	0.07276	±0.07
1,2,3,4-Tetrahydro-1-naphthol	40.20	39.77	38.91	38.06	37.20	36.34	------	------	------	------	------	43.63	0.08575	±0.22

TABLE 77.3 Substituted phenols and phenolic ethers [28]

(Maximum Bubble Pressure-A)

Compound	Surface tension (±0.20)															Least squares constants		σ_γ
	50°	60°	70°	80°	90°	100°	115°	120°	130°	140°	150°	160°	170°	180°	190 °C	a	b	
Methyl phenylazo-2-naphthyl ether	------	------	------	42.69	41.64	40.60	39.04	------	------	------	------	------	------	------	------	51.03	0.1043	±0.05
1,2-Naphthoquinone 1-phenylhydrazone	------	------	------	------	------	------	------	------	------	------	36.78	35.86	34.94	34.02	33.10	50.58	0.0920	±0.12
2-Methoxyazobenzene	42.11	41.06	40.02	38.97	37.93	------	------	------	------	------	------	------	------	------	------	47.34	0.1046	±0.06
3-Methoxyazobenzene	41.25	40.12	38.98	37.84	------	------	------	------	------	------	------	------	------	------	------	46.94	0.1137	±0.09
4-Methoxyazobenzene	------	------	39.41	38.26	37.10	35.94	------	------	------	------	------	------	------	------	------	47.52	0.1158	±0.14
m-Phenylazophenol	------	------	------	------	------	------	------	39.76	38.77	37.79	36.80	------	------	------	------	51.58	0.0985	±0.18
o-Benzoquinone phenylhydrazone	------	------	------	------	------	35.76	34.43	33.99	33.11	------	------	------	------	------	------	44.60	0.0884	±0.11
o-Anisaldehyde	39.81	38.71	37.60	36.50	35.39	------	------	------	------	------	------	------	------	------	------	45.34	0.1105	±0.00
p-Phenylazophenol	------	------	------	------	------	------	------	------	------	------	------	------	34.60	33.60	32.60	51.60	0.1000	±0.00
p-Anisaldehyde[a]	39.45	38.41	37.36	36.31	35.27	34.22	32.65	32.13	31.08	30.03	28.98	27.94	26.89	25.84	24.80	44.69	0.1047	±0.29

[a] Ref. [108] (N_2) (±2.0).

TABLE 78. Chlorides of sulfur

(Capillary Rise Method-A)

Compound	Surface tension (±0.10)								Least squares constants		σ_γ
	15°	25°	35°	45°	55°	65°	75°	85 °C	a	b	
Sulfur monochloride[a]	44.03	42.57	41.11	39.64	38.18	36.71	35.25	33.79	46.23	0.1464	±0.11
Thionyl chloride[b]	33.98	32.56	31.14	29.73	28.31	26.90	-------	-------	36.10	0.1416	±0.10
Sulfuryl chloride[b]	30.11	28.78	27.45	26.12	-------	-------	-------	-------	32.10	0.1328	±0.21

[a] Ref. [248].

[b] Ref. [250].

TABLE 79. Sulfur dioxide addition compounds

(Capillary Rise Method-V)

Compound	Surface tension (±0.07)									Least squares constants	
	0°	5°	10°	15°	20°	25°	30°	35°	40 °C	a	b
Triethylamine—sulfur dioxide[a]	38.24	37.55	36.86	36.18	35.49	34.80	34.11	-------	-------	38.24	0.1376
Tripropylamine—sulfur dioxide[b]	33.25	32.65	31.91	31.30	30.59	29.95	29.25	28.64	28.03	33.25	0.1317
N,*N*-Dimethylaniline—sulfur dioxide[c]	43.87	42.97	42.02	41.26	40.23	39.37	38.49	-------	-------	43.87	0.1799

[a] Ref. [21].

[b] Ref. [110].

[c] Ref. [20].

TABLE 80.1. Tertiary chlorides [204, 172]

(Maximum Bubble Pressure-A)

Chloromethane	Surface tension (±0.10)							Least squares constants	
	0°	25°	35°	45°	55°	65°	75 °C	*a*	*b*
2-Chloro-2-methylpropane	21.35	18.30							
2-Chloro-2-methylbutane	25.11	21.81	20.49	19.17	17.85			25.11	0.1320
3-Chloro-3-methylpentane	26.52	23.65	22.50	21.35	20.21			26.52	0.1148
3-Chloro-3-ethylpentane	27.88	25.35	24.34	23.33	22.31			27.88	0.1012
3-Chloro-3-ethylhexane	28.08	25.50	24.47	23.44	22.41			28.08	0.1030
4-Chloro-4-ethylheptane	28.20	25.82	24.86	23.91	22.95			28.20	0.0954
4-Chloro-4-propylheptane	28.28	25.93	25.00	24.06	23.12	22.18	21.25	28.28	0.0938
2-Chloro-2-methylpentane	24.98	22.41	21.38	20.35	19.32	18.29	17.26	24.98	0.1029
4-Chloro-4-methylheptane	27.09	24.75	23.81	22.88	21.94			27.09	0.0936
3-Chloro-3-methylhexane	26.92	24.37	23.35	22.33	21.31			26.92	0.1020
2-Chloro-2-methylhexane	26.10	23.66	22.68	21.70	20.72	19.74	18.77	26.10	0.0978
3-Chloro-3-methylheptane	24.11	23.38	23.08	22.79	22.50			24.11	0.0293
4-Chloro-4-methyloctane	28.41	25.98	25.00	24.03	23.05			28.41	0.0973
5-Chloro-5-methylnonane	28.51	26.24	25.32	24.41	23.50			28.51	0.09113
2-Chloro-2-methylheptane	26.86	24.50	23.56	22.61	21.67			26.86	0.09442
3-Chloro-3-methyloctane	28.77	26.17	25.13	24.09	23.05			28.77	0.1040
4-Chloro-4-methylnonane	28.85	26.52	25.58	24.66	23.72			28.85	0.0933
5-Chloro-5-methyldecane	29.29	27.16	26.31	25.46	24.61			29.29	0.0051
5-Chloro-5-propyldecane	29.26	26.99	26.09	25.18	24.27			29.26	0.0907
5-Chloro-5-butyldecane	29.80	27.43	26.49	25.54	24.59			29.80	0.0947
2-Chloro-2-methyloctane	27.75	25.37	24.42	23.47	22.51	21.56	20.61	27.75	0.0952
3-Chloro-3-methylnonane	28.70	26.36	25.42	24.49	23.55	22.62	21.68	28.70	0.0936
4-Chloro-4-methyldecane	28.75	26.48	25.58	24.67	23.77	22.86	21.96	28.75	0.0906
5-Chloro-5-methylundecane	29.30	27.05	26.15	25.25	24.35	23.45	22.55	29.30	0.0900
6-Chloro-6-methyldodecane	29.18	27.03	26.18	25.32	24.46	23.60	22.74	29.18	0.0858

TABLE 80.2. Ditertiary chlorides [120]

(Max. Bubble Pressure-A)

Compound	Surface tension (±0.20)						Least squares constants	
	25°	35°	45°	55°	65°	75 °C	*a*	*b*
2,5-Dichloro-2,5-dimethylhexane					24.67	23.59		
3,6-Dichloro-3,6-diethyloctane	31.33	30.40	29.48	28.55			33.65	0.09275
4,7-Dichloro-4,7-dipropyldecane	29.86	28.96	28.07	27.17			32.11	0.08986
2,7-Dichloro-2,7-dimethyloctane				26.43	25.62	24.81	30.89	0.0810
3,8-Dichloro-3,8-diethyldecane	32.16	31.22	30.28	29.35			34.51	0.0939
4,9-Dichloro-4,9-dipropyldodecane	30.71	29.81	28.91	28.03			32.96	0.0899
2,10-Dichloro-2,10-dimethylundecane	30.33	29.44	28.54	27.64			32.57	0.08955
3,11-Dichloro-3,11-diethyltridecane	32.61	31.73	30.86	29.99			34.79	0.08729
2,11-Dichloro-2,11-dimethyldodecane	30.75	29.87	28.99	28.11			32.96	0.0882
3,12-Dichloro-3,12-diethyltetradecane	32.89	32.01	31.12	30.23			35.11	0.08869
4,13-Dichloro-4,13-dipropylhexadecane	31.53	30.68	29.82	28.96			33.67	0.08557

TABLE 81. Terpenes

Compound	Surface tension											Least squares constants		σ_γ
	10°	20°	30°	40°	60°	80°	100°	120°	130°	140°	150 °C	a	b	
d-Pinene[a]	27.41	26.46	25.52	24.57	22.68	20.79	18.91	17.02	16.07	15.13	-------	28.35	0.09444	±0.04
l-Pinene[a]	27.33	26.39	25.46	24.52	22.65	20.79	18.92	17.05	16.11	15.18	-------	28.26	0.09343	±0.06
dl-Pinene[a]	27.03	26.10	25.16	24.23	22.37	20.50	18.64	16.78	15.84	14.91	-------	27.96	0.0932	±0.07
d-*p*-Mentha-1,8-diene[a]	28.57	27.64	26.71	25.78	23.93	22.07	20.21	18.35	17.42	16.49	15.56	29.50	0.0929	±0.06
l-*p*-Mentha-1,8-diene[a]	28.05	27.16	26.26	25.36	23.57	21.77	19.98	18.19	17.29	16.39	15.50	28.95	0.08969	±0.06
DL-*p*-Mentha-1,8-diene[a]	28.20	27.28	26.37	25.46	23.63	21.81	19.98	18.15	17.24	16.33	15.41	29.11	0.09131	±0.05
m-Mentha-1,8-(9)-diene[b]	27.87	26.90	25.94	24.98	23.05	21.13	19.20	17.27	16.31	15.35	14.38	28.83	0.09631	±0.20
2(10)-Pinene[b]	28.17	27.27	26.37	25.47	23.67	21.87	20.07	18.27	17.37	16.47	15.57	29.07	0.09001	±0.14
Linalool[c]	27.42	26.62	25.81	25.00	23.39	21.77	20.16	18.55	17.74	16.93	16.12	28.23	0.0807	±0.09
p-Mentha-6,8-dien-2-one[d]	35.62	34.70	33.78	32.86	31.02	29.18	27.34	25.50	24.57	23.65	22.73	36.54	0.09204	-------

[a] Ref. [151] (Capillary Rise Method-A).
[b] Ref. [108] (Maximum Bubble Pressure-N_2) (±2.0).
[c] Ref. [179] (Capillary Rise Method-A) (±0.3).
[d] Ref. [192] (Capillary Rise Method-A) (±0.7).

TABLE 82. Thiocyanates

(Capillary Rise Method)

Compound	Surface tension												Least squares constants		σ_γ
	10°	20°	30°	40°	50°	60°	80°	100°	120°	140°	160°	180 °C	a	b	
Methyl thiocyanate[a]	39.35	38.05	36.74	35.44	34.13	32.83	30.22	27.61	25.00	-------	-------	-------	40.66	0.1305	±0.7
Ethyl thiocyanate[b]	36.05	34.83	33.60	32.38	31.15	29.92	27.47	25.02	22.57	20.12	-------	-------	37.28	0.1226	-------
Ethyl isothiocyanate[b]	37.36	36.04	34.71	33.39	32.06	30.73	28.08	-------	-------	-------	-------	-------	38.69	0.1326	-------
Propyl thiocyanate[c]	33.78	32.74	31.70	30.66	29.61	28.57	26.49	24.41	22.33	-------	-------	-------	34.82	0.1041	±0.10
Butyl thiocyanate[c]	32.94	31.98	31.03	30.07	29.12	28.16	26.25	24.35	22.44	-------	-------	-------	33.89	0.09544	±0.04
Butyl isothiocyanate[d]	31.43	30.42	29.42	28.42	27.41	26.41	24.41	22.40	20.39	-------	-------	-------	32.43	0.1003	±0.04
Allyl isothiocyanate[a]	35.69	34.61	33.54	32.46	31.39	30.32	28.17	26.02	23.87	21.72	-------	-------	36.76	0.1074	±0.03
Triisopentylammonium thiocyanate[e]	-------	-------	-------	-------	-------	-------	30.28	29.40	28.52	27.64	-------	-------	33.81	0.0441	±0.02
Phenyl isothiocyanate[d]	41.64	40.56	39.47	38.39	37.30	36.21	34.04	31.87	29.70	27.53	25.35	23.18	42.73	0.1086	±0.16

[a] Ref. [192] (A) (±0.7).
[b] Ref. [177] (V) (±1.0).
[c] Ref. [250] (A) (±0.10).
[d] Ref. [16] (A) (±0.30).
[e] Ref. [257] (A) (±0.30).

TABLE 83.1. Thiophene [116]

(Maximum Bubble Pressure Method-A)

Compound	Surface tension (±0.15)				Least squares constants	
	20°	40°	60°	85 °C	a	b
Thiophene	31.34	28.69	26.03		34.00	0.1328

TABLE 83.2. Alkylthiophenes [116]

Alkylthiophenes	Surface tension (±0.15)				Least squares constants		σ_γ
	20°	40°	60°	85 °C	a	b	
2-Methyl-	30.83	28.27	25.71	22.51	33.39	0.1280	±0.15
2-Ethyl-	29.86	27.81	25.75	23.19	31.92	0.1028	±0.25
2-Propyl-	29.68	27.66	25.63	23.10	31.71	0.1013	±0.01
2-Butyl-	29.75	27.94	26.14	23.88	31.55	0.0902	±0.01
2-Pentyl-	30.09	28.18	26.27	23.88	32.00	0.0955	±0.11
2-Hexyl-	30.08	28.21	26.35	24.02	31.94	0.0932	±0.14
2-Heptyl-	30.40	28.54	26.68	24.36	32.26	0.0930	±0.01
3-Methyl-	32.33	29.91	27.50	24.47	34.75	0.1209	±0.04
2,5-Dimethyl-	30.45	28.28	26.12	23.41	32.62	0.1084	±0.12

TABLE 83.3. 2-Thiophenecarboxylates [116]

Ester	Surface tension (±0.15)				Least squares constants		σ_γ
	20°	40°	60°	85 °C	a	b	
Methyl	39.33	36.90	34.50	31.47	41.75	0.1209	±0.32
Ethyl	36.97	34.63	32.28	29.35	39.32	0.1173	±0.18
Propyl	34.06	32.22	30.38	28.08	35.90	0.0920	±0.26
Butyl	33.12	30.92	28.72		35.32	0.1100	±0.01
Pentyl	32.52	30.81	29.11	26.98	34.22	0.0852	±0.08
Hexyl	32.55	30.08	27.60		35.03	0.1238	±0.04
Heptyl	31.72	30.00	28.26	26.08	33.47	0.0869	±0.06

TABLE 83.4. Alkyl-2-thienyl ketones [116]

2-Thienyl ketone	Surface tension (±0.15)				Least squares constants		σ_γ
	20°	40°	60°	85 °C	a	b	
Methyl-	42.70	39.69	36.67	32.90	35.72	0.1508	±0.03
Ethyl-	39.55	37.13	34.71	31.68	41.97	0.1210	±0.40
Propyl-	36.78	35.17	33.55	31.53	38.40	0.08086	±0.49
Isopropyl-	37.09	35.26	33.43	31.14	38.92	0.0915	±0.02
Butyl-	35.65	33.92	32.19	30.02	37.38	0.0866	±0.02
Pentyl-	34.83	33.08	31.34	29.15	36.58	0.0874	±0.11
Hexyl-	34.36	32.70	31.03	28.96	36.02	0.0831	±0.17

TABLE 83.5. Halogenathiophenes [116]

Thiophene	Surface tension (±0.15)				Least squares constants		σ_γ
	20°	40°	60°	85 °C	a	b	
2-Chloro-	33.91	31.75	29.58	26.87	36.08	0.1083	±0.14
2-Bromo-	37.44	35.31	33.19	30.53	39.57	0.1064	±0.05
2-Iodo-	42.62	40.45	38.27	35.55	44.80	0.1088	±0.06
2,5-Dichloro-	37.94	35.49	33.04	29.98	40.39	0.1225	±0.18
2,5-Dibromo-	43.51	41.34	39.18	36.47	45.67	0.1082	±0.02

TABLE 83.6. Miscellaneous thiophene compounds [116]

Compounds	Surface tension (±0.15)				Least squares constants		σ_γ
	20°	40°	60°	85 °C	a	b	
2-Thiopheneethanol	40.30	37.87	35.43	32.39	42.73	0.1216	±0.10
2-Thiophenepropanol	36.77	34.89	33.01	30.66	38.65	0.0940	±0.06
2-Thiophenebutanol	36.27	34.13	32.00	29.32	38.41	0.1069	±0.06
2-Thiophenecarbonitrile	46.44	43.72	40.99	37.58	49.17	0.1363	±0.02
2-Methoxythiophene	36.53	34.16	31.78	28.81	38.91	0.1188	±0.20
2-Ethoxythiophene	33.74	31.69	29.64	27.08	35.79	0.1025	±0.09
2-Thiophenecarboxaldehyde	49.13	46.50	43.87	----------	51.76	0.1315	±0.18
Tetrahydrothiophene	35.76	33.07	30.39	27.03	38.44	0.1342	±0.10
Tetrahydrothiophene oxide	49.49	47.01	44.53	41.43	51.97	0.1240	±0.29
Tetrahydrothiophene dioxide	----------	49.35	43.25	35.62	61.55	0.0305	±0.10
Tetrahydrothiopyran	36.11	33.66	31.20	----------	38.57	0.1228	±0.06
1,4-Oxathiane	42.42	39.92	37.41	34.28	44.93	0.1253	±0.06

TABLE 84. Titanium tetrachloride [170]

(Capillary Rise Method-V)

($\gamma = 36.06 - 0.12705t + 0.574 \times 10^{-4}t^2 + 0.146 \times 10^{-6}t^3$)

Surface tension (±0.2)									
0°	10°	20°	30°	40°	50°	60°	70°	80°	90 °C
36.06	34.80	33.54	32.30	31.06	29.87	28.68	27.50	26.34	25.20

TABLE 85. Vanadium oxytrichloride [170]

(Maximum Bubble Pressure Method)

($\gamma = 39.32 - 0.1531t + 0.284 \times 10^{-3}t - 0.742 \times 10^{-6}t^3$)

Surface tension (±0.2)									
0°	10°	20°	30°	40°	50°	60°	70°	80°	90 °C
39.32	37.82	36.36	34.97	33.60	32.28	30.99	29.74	28.51	27.30

TABLE 86. Water

Surface tension (±0.10)														Least squares constants		σ_γ
10°	15°	20°	25°	30°	35°	40°	45°	50°	60°	70°	80°	90°	100 °C	a	b	
74.36	73.62	72.88	72.14	71.40	70.66	69.92	69.18	68.45	66.97	65.49	64.01	62.54	61.06	75.83	0.1477	±0.08

Ref. [33] (Capillary rise-He).
Ref. [72aa] (Capillary rise-N_2).
Ref. [155] (Capillary Rise-A).
Ref. [181] (Capillary rise-A).
Ref. [224] (Capillary rise-A).
Ref. [264] (Capillary rise-A).

TABLE 86. Water—Continued

Heavy water [36]

(Horizontal Capillary Pressure-A)

Surface tension (±0.18) ($\gamma = 74.64 - 0.1082t^{1.1}$)

5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75 °C
74.00	73.28	72.52	71.72	70.91	70.08	69.24	68.38	67.51	66.64	65.75	64.86	63.96	63.05	62.14

Deuterium oxide [89]

(at elevated temperatures)

(Capillary Rise Method-V)

Surface tension (±0.10)								Least squares constants		σ_γ
100°	110°	120°	140°	160°	180°	200°	215 °C	a	b	
58.61	56.41	54.21	49.81	45.40	41.00	36.60	33.30	80.62	0.2201	±0.24

Hydrogen peroxide [140]

(Capillary Rise Method-A)

Surface tension (±0.50)								Least squares constants		σ_γ
2°	4°	6°	8°	10°	12°	15°	20 °C	a	b	
78.66	78.35	78.04	77.73	77.42	77.11	76.65	75.87	78.97	0.1549	±0.22

3.1. Tables of Surface Tension at Single Temperatures

TABLE 87.1. Polysiloxanes (25 °C) [107]

(Method not given)

Octamethyltrisiloxane	67.56
Decamethyltetrasiloxane	86.20
Dodecamethylpentasiloxane	17.08
Tetradecamethylhexasiloxane	17.42
Hexadecamethylheptasiloxane	17.61
Octadecamethyloctasiloxane	18.03

TABLE 87.2. Linear polymethylsiloxanes (20 °C) [64]

(Ring Detachment-A)

Heptadecamer	19.9
Dodecamer	19.6
Nonamer	19.2
Heptamer	18.6
Hexamer	18.5
Pentamer	18.1
Tetramer	17.6
Trimer	17.0

TABLE 87.3. Chloromethylsilanes (20 °C) [180]

(Cap. Rise-V)

Trichloromethylsilane	20.3
Dichlorodimethylsilane	20.1
Trimethylsilanol	18.4

TABLE 87.4. Esters (20 °C) [64, 194]

(Ring Detachment-A)

Tricresyl phosphate	40.9
Benzyl phenylundecanoate	37.7
Di(2-ethylhexyl) phthalate	31.2
Di(2-ethylhexyl) sebacate	31.1
Pentaerythritol tetracaproate	30.4
1,6-Hexamethylene glycol di-2-ethylhexanoate	30.2
Di(2-ethylhexyl)adipate	30.2
Tri(2-ethylhexyl) tricarballylate	29.6
Butylphenylhendecanoate	38.0
Hexa(2-ethyl-1-hexoxy) disiloxane	26.8
Hexa(2-ethyl-1-butoxy) disiloxane	26.1

TABLE 87.5. Acetals and ethers (20 °C) [152]

(Max. Bubble Pressure-A)

1,1-Diisopropoxyethane	20.97
1,1-Dipentyloxyethane	25.67
1,1-Diisopentyloxyethane	23.98
1,1-Di(2-chloroethoxy)ethane	36.22
1,1-Di(2-ethoxyethyloxy)ethane	27.44
1-Butoxy-1-ethoxyethane	23.26
1-Butoxy-1-*tert*-butoxyethane	22.65
sec-Butyl vinyl ether	20.76
Pentyl vinyl ether	23.44
Octyl vinyl ether	26.32

TABLE 87.6. Alkyl glycolates (20 °C) [52]

(Method not given)

Propyl glycolate	31.55
Butyl glycolate	30.43
Hexyl glycolate	29.66
Heptyl glycolate	29.40

TABLE 87.7. Alkyl glycol monoethers (20 °C) [42]

(Cap. Rise-A)

2-Pentyloxyethanol	27.6
2-(2-Pentyloxyethoxy)ethanol	29.9
2-Hexyloxyethanol	27.7
2-(2-Hexyloxyethoxy)ethanol	29.6
1-(2-Hexyloxyethoxy)-2-(2-hydroxyethoxy)ethane	31.0
Tetraethylene glycol monohexyl ether	32.1
2-Octyloxyethanol	29.8
2-(2-Octyloxyethoxy)ethanol	30.7
1-(2-Hydroxyethoxy)-2-(2-octyloxyethoxy)ethane	31.5
Tetraethylene glycol mono-octyl ether	32.0
Pentaethylene glycol mono-octyl ether	32.17
Hexaethylene glycol mono-octyl ether	32.85
2-Dodecyloxyethanol	29.6
2-(2-Dodecyloxyethoxy)ethanol	30.6
1-(2-Dodecyloxyethoxy)-2-(2-hydroxyethoxy)ethane	31.3
Tetraethylene glycol mono-dodecyl ether	31.7
Pentaethylene glycol mono-dodecyl ether	32.0

TABLE 87.8. Alkyl derivatives of benzene and styrene (20 °C) [325]

(Max. Bubble Pressure-A)

Isopentylbenzene	28.34
tert-Pentylbenzene	29.02
p-Cymene	29.44
p-Di-*sec*-butylbenzene	29.98
β-Methylstyrene	34.12
Styrene	32.00
Allylbenzene	30.37
α-Methylstyrene	32.56
β-Ethylstyrene	32.01
1-Phenyl-2-butene	30.48
2-Phenyl-2-butene	33.61
(2-Methylpropenyl)benzene	31.86
β-Propylstyrene	33.23
β-Isopropylstyrene	31.40
β-Ethyl-β-methylstyrene	31.80
α,β,β-Trimethylstyrene	32.04
β-Ethyl-α-methylstyrene	32.25
α-Ethyl-β-methylstyrene	33.87
β,β-Diethylstyrene	32.22
β-Isobutyl-α-methylstyrene	31.38
β-Ethyl-α-propylstyrene	34.20
cis-β-Vinylstyrene	36.15
trans-β-Vinylstyrene	36.21
Isopropyl-1-pentylstyrene	36.59

TABLE 87.9. Nonaromatic cyclic compounds (20 °C) [152]

(Method not given)

2-Methoxycyclopentanol	38.1
2-Ethoxycyclopentanol	35.0
2-Methoxycyclohexanol	37.7
2-Ethoxycyclohexanol	34.7
2-Propoxycyclohexanol	34.7
2-Methoxy-1-methylcyclohexanol	36.4
1-Ethyl-2-methoxycyclohexanol	36.1
1,2-Dimethoxycyclopentane	31.9
1,2-Diethoxycyclopentane	31.9
1,2-Dimethoxycyclohexane	34.2
1,2-Diethoxycyclohexane	33.9
1,2-Dipropoxycyclohexane	33.5
1,2-Diisopropoxycyclohexane	33.4
1,2-Dibutoxycyclohexane	33.1
1,2-Dicyclohexyloxycyclohexane	36.5
Bicyclopentyl[a] (30 °C)	29.8

[a] Ref. [113a] (Horizontal Capillary-A).

TABLE 87.10. Halogenated hydrocarbons (non-fluoro) (20 °C) [194]

(Cap. Rise)

Trichlorobiphenyl	45.3
Tetrachlorobiphenyl	44.2
Perchlorocyclopentadiene	37.5
Hexachloro-1,3-butadiene	36.0

TABLE 87.11. Fluorocarbons (25 °C) [88]

(Method not given)

Perfluoro-1,2-dimethylcyclohexane	15.5
Perfluoro-1,3,5-trimethylcyclohexane	17.2
Perfluoro-1,2,4-trimethylcyclohexane	17.3
Perfluoro-octane	13.7
Perfluorododecane (113.5 °C)	10.6
Perfluoro-2-methyldecahydronaphthalene	19.2
Perfluoropropylcyclohexane	17.2
Perfluorobutylcyclohexane	17.7
Perfluoro-4-isopropyl-1-methylcyclohexane	17.5
Perfluorodecahydronaphthalene	18.3
Perfluorononane	14.4
Perfluorodecane (45 °C)	13.5
Perfluoroundecane (70 °C)	12.7
Perfluoro-1,4-dimethylcyclohexane[a] (20 °C)	16.3

[a] Ref. [63].

TABLE 87.12. Fluorocarbons and derivatives (20 °C) [64, 194]

(Cap. Rise)

p-Difluorobenzene	27.0
Perfluorotrihexylamine	18.3
Perfluorotributylamine	16.3
Perfluorotripropylamine	15.2
Perfluorodibutyl ether	13.4
1,1,1,3,3,3-Hexachloro-2,2-difluoropropane	32.6
1,1,1,3,3-Pentachloro-2,2,3-trifluoropropane	27.8
1,2,2,3-Tetrachloro-1,1,3,3-tetrafluoropropane	22.8
2,2,3,3-Tetrafluoro-1-propanol	27.6
2,2,3,3,4,4,5,5-Octafluoro-1-pentanol	24.5
2,2,3,3,4,4,5,5,6,6,7,7-Dodecafluoro-1-heptanol	23.8

TABLE 87.13. Fluorinated esters and ethers (20 °C) [56]

(Method not given)

Hexyl heptafluorobutyrate	19.2
Octadecyl heptafluorobutyrate	25.1
Butyl pentadecafluorooctanoate	18.7
1,6-Hexanediol bis(heptafluorobutyrate)	21.5
1,10-Decanediol bis(heptafluorobutyrate)	23.0
1,6-Hexanediol bis(7H-dodecafluoroheptanoate)	25.9
1,6-Hexanediol bis(pentadecafluorooctanoate)	20.6
2-Ethyl-2-(hydroxymethyl)-1,3-propanediol heptafluorobutyrate	21.2
1H,1H,9H-Hexadecafluorononyl 2-ethylhexanoate	23.1
Bis(1H,1H,5H-octafluoropentyl) glutarate	27.5
Bis(1H,1H-heptafluorobutyl) 3-methylglutarate	20.5
Bis(1H,1H,5H-octafluoropentyl) 3-methylglutarate	26.8
Bis(1H,1H-undecafluorohexyl) 3-methylglutarate	19.9
Bis(1H,1H,7H-dodecafluoroheptyl) 3-methylglutarate	25.6
Bis(1H,1H-pentadecafluorooctyl) 3-methylglutarate	19.5
Bis(1H,1H,9H-hexadecafluorononyl) 3-methylglutarate	25.0
Bis(1H,1H,5H-octafluoropentyl) adipate	27.7
Bis(1H,1H,7H-dodecafluoroheptyl) adipate	26.1
Bis(1H,1H,9H-hexadecafluorononyl) 3-*tert*-butyl-adipate	24.9
Bis(1H,1H-heptafluorobutyl) sebacate	22.4
Bis(1H,1H,5H-octafluoropentyl) sebacate	28.2
Bis(1H,1H,7H-dodecafluoroheptyl) pinate	26.2
Bis(1H,1H,5H-octafluoropentyl) phthalate	28.0
Tris(1H,1H,5H-octafluoropentyl) tricarballylate	27.2
1H,1H,7H-Dodecafluoroheptyl methyl ether	22.1
Bis(1H,1H,7H-dodecafluoroheptoxy)hexane	25.3

Fluorinated esters [61]

(Ring Detachment)

Diethyl perfluoroadipate (27.0)	22.7
Dibutyl perfluoroadipate (26.0)	22.2
Bis(1H,1H-heptafluorobutyl) adipate (25.8)	20.4
2,2,3,3,4,4,5,5-Octafluoro-1,6-hexanediol dibutyrate	23.9
1,5-Pentanediol di(trifluoroacetate) (26.2)	24.4
1,5-Pentanediol di(perfluorobutyrate) (26.2)	20.6
1,6-Hexanediol di(perfluorobutyrate) (26.2)	22.2
1,5-Pentanediol di(perfluorooctanoate) (26.2)	19.1
Pentaerythritol tetra(perfluorobutyrate) (26.0)	18.5
m-(Trifluoromethyl)benzyl perfluorobutyrate (26.5)	24.8

TABLE 87.14. Organic phosphoryl compounds (20 °C) [55]

(Drop Wt.-A)

Diisopropyl phosphonate	26.4
Diethyl phosphorofluoridate	25.9
Diisopropyl phosphorofluoridate	24.5
Diethyl phosphorochloridate	32.0
Diisopropyl phosphorochloridate	28.3
Methyl phosphorodichloridate	34.9
Ethyl phosphorodichloridate	32.8
Diethyl dimethylphosphoramidate	30.3
Ethyl dimethylphosphoramidochloridate	34.9
Dimethylphosphoramidic difluoridate	25.1
Dimethyphosphoramidic dichloride	36.1
Diethylphosphoramidic dichloride	35.7
Tetramethylphosphordiamidic fluoride	33.4

TABLE 87.15. Esters of boric acid (20 °C) [3]

(Max. Bubble Pressure-A)

Propyl borate	22.48
Isopropyl borate	19.02
Butyl borate	24.42
Heptyl borate	26.15
Octyl borate	28.18
Decyl borate	29.38

TABLE 87.16. Germanium compounds [201]

(Max. Bubble Pressure-A)

Germanium tetrachloride (30 °C)	22.44
Germanium tetrabromide (30 °C)	35.51
Germanium tetrabromide (50 °C)	33.70
Tetraethylgermanium (30 °C)	22.96
Tetraethoxygermanium (30 °C)	23.00

TABLE 87.17. Sulfur halides (20 °C) [57, 58]

(Method not given)

Sulfur dichloride	37.2
Trisulfur dichloride	47.8
Tetrasulfur dichloride	52.5
Sulfur monobromide	39.1
Trisulfur dibromide	41.0
Tetrasulfur dibromide	42.8

TABLE 87.18. Miscellaneous compounds

Compound	Temp. °C	Surface tension	Reference
2,2′-Thiodiethanol	20	54.0	50
4-Hydroxy-4-methyl-2-pentanone	20	31.0	66
4-Methyl-3-penten-2-one	20	28.4	66
Triethylboron	30	19.84	128
Disilthiane	18	22.31	143
Sulfuryl chlorofluoride	0	17.2	17
Chlorotrinitromethane	20	34.2	265
1,1-Di-*p*-tolylethane	30	34.5	15
1-*o*-Tolyl-1-*p*-tolylethane	30	35.5	15
1-*m*-Tolyl-1-*o*-tolylethane	30	36.1	15
2,2-Di-*p*-tolylbutane	30	33.6	15
m,*m*′-Bitolyl	20	39.0	150
Cyclo-octadiene	20	31.46	30
Diolein succinate	70.2	25.35	60
Distearin succinate	94.6	28.01	60
Boron trifluoride— ethyl methyl etherate	25	30.8	129
Ozone	−182.7	38.1	117
1,1-Dichloro-2-propanone	20	31.91	86
2,2-Dichloroethyl sulfide	20	42.82	85
4-Methyl-4-penten-2-one	20	23.0	213
1-*o*-Allylglycerol	20	33.3	41

4. Figures

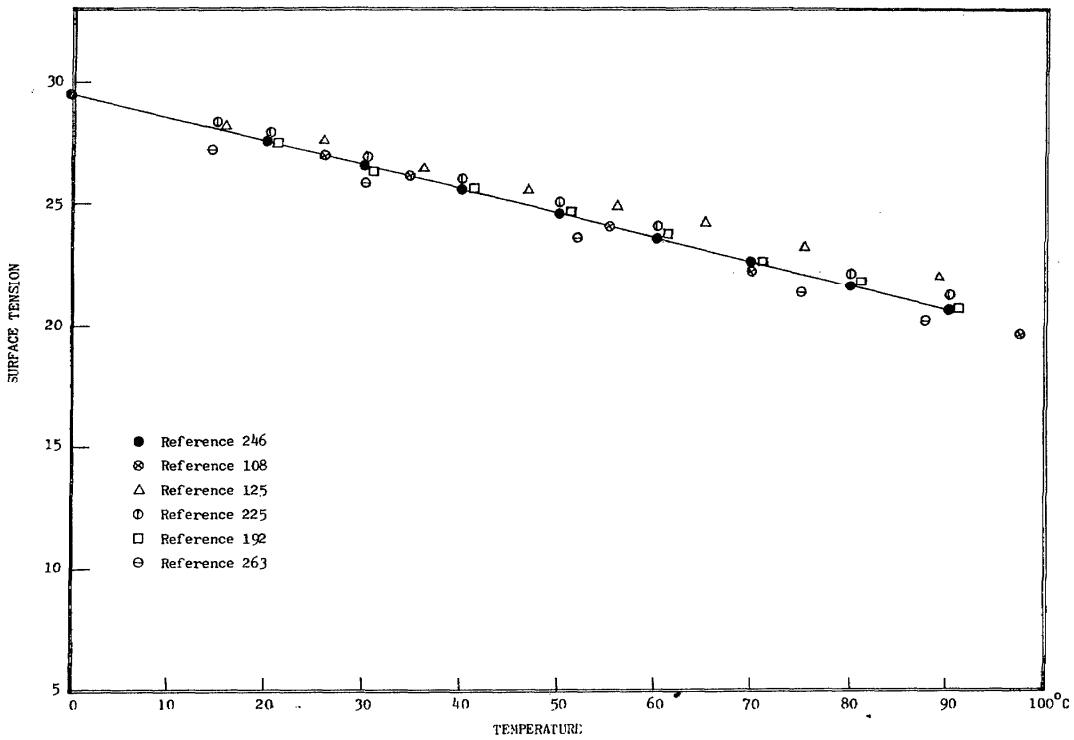


FIGURE 1. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurement for acetic acid (solid line passes thru recommended values).

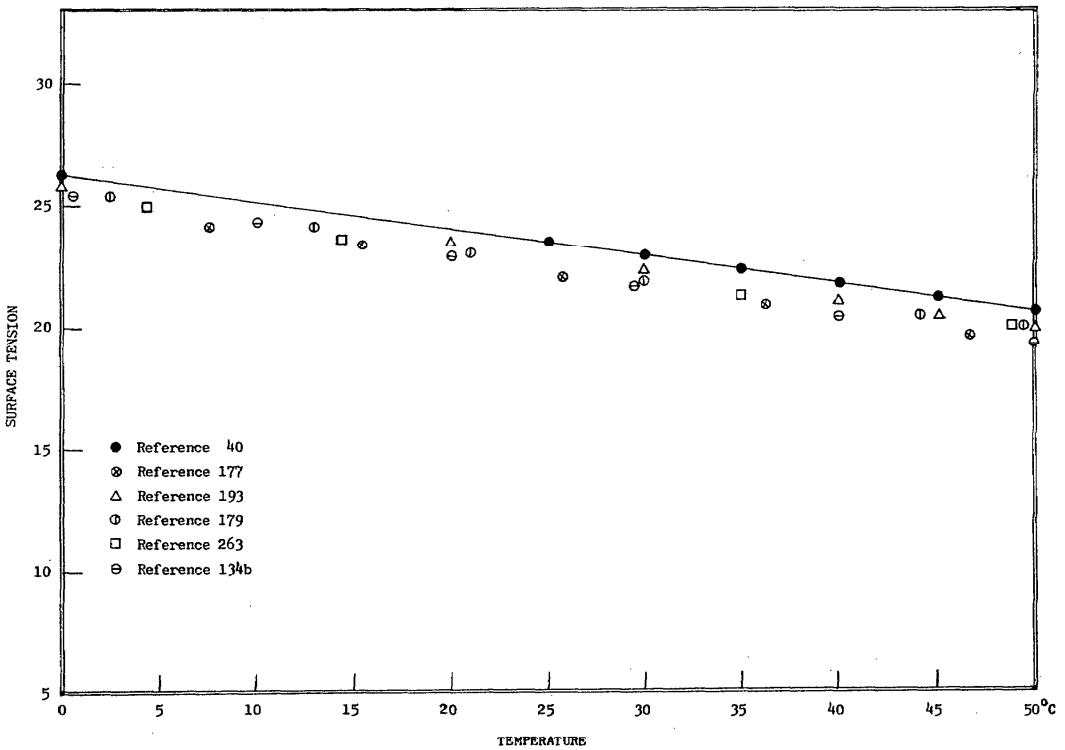


FIGURE 2. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for acetone (solid line passes thru recommended values).

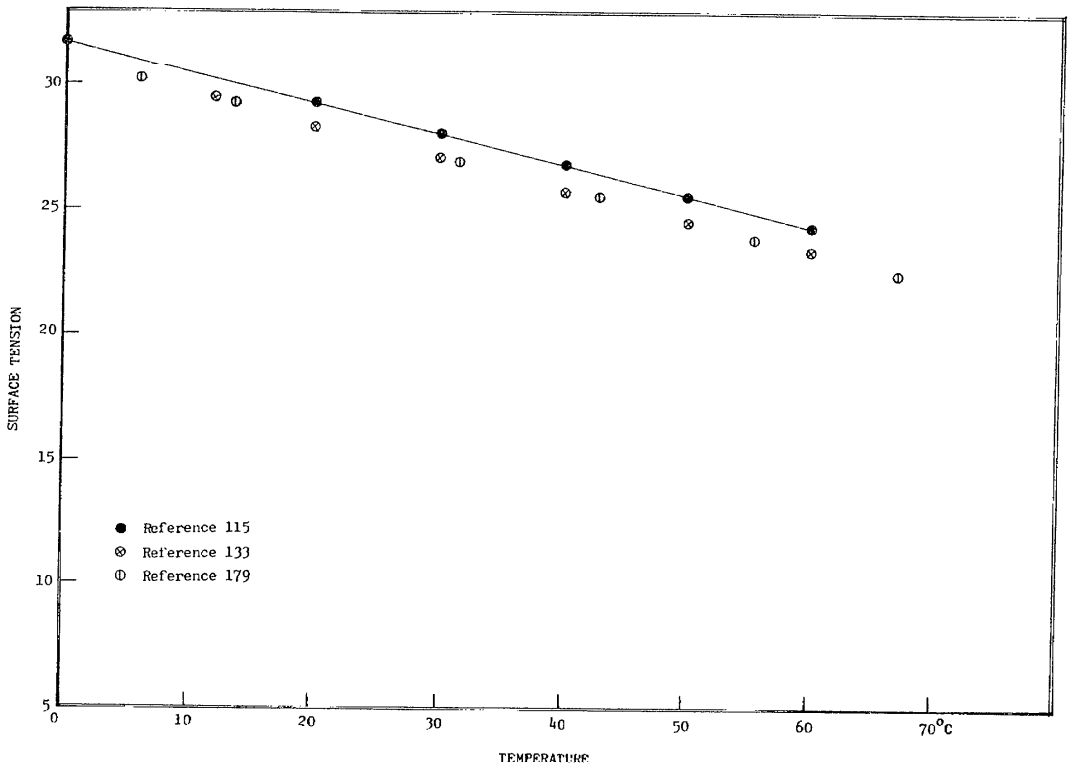


FIGURE 3. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for acetonitrile (solid line passes thru recommended values).

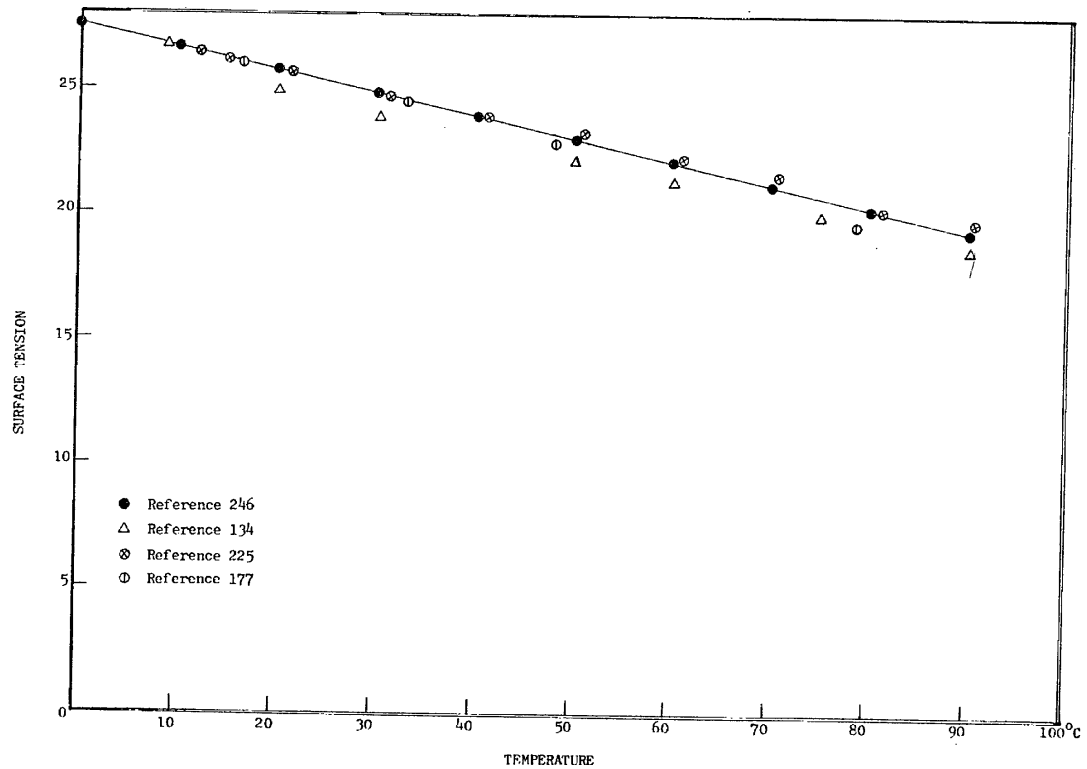


FIGURE 4. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for allyl alcohol (solid line passes thru recommended values).

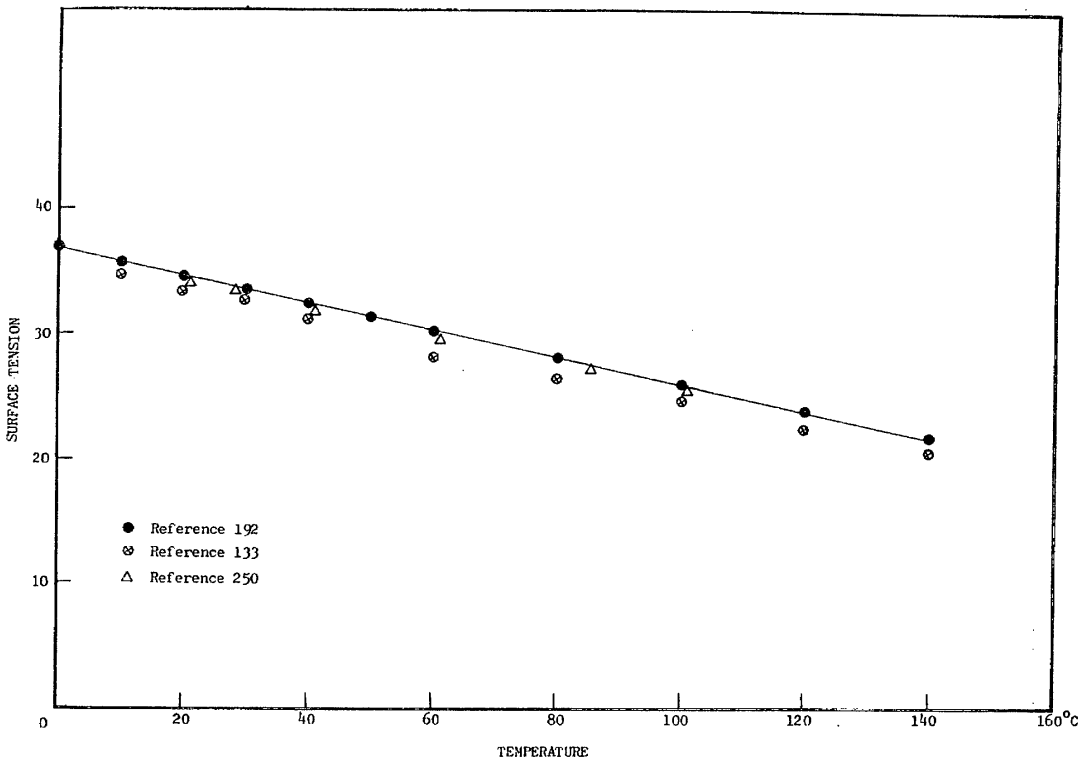


FIGURE 5. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for allyl isothiocynate (solid line passes thru recommended values).

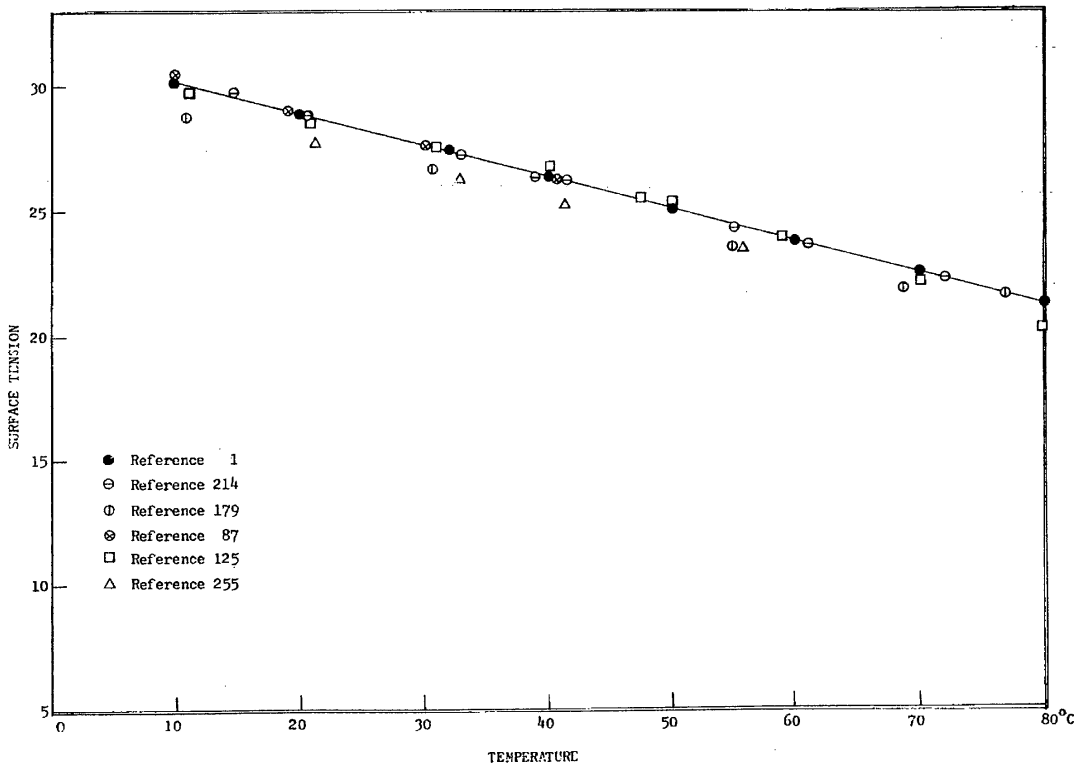


FIGURE 6. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for benzene (solid line passes thru recommended values).

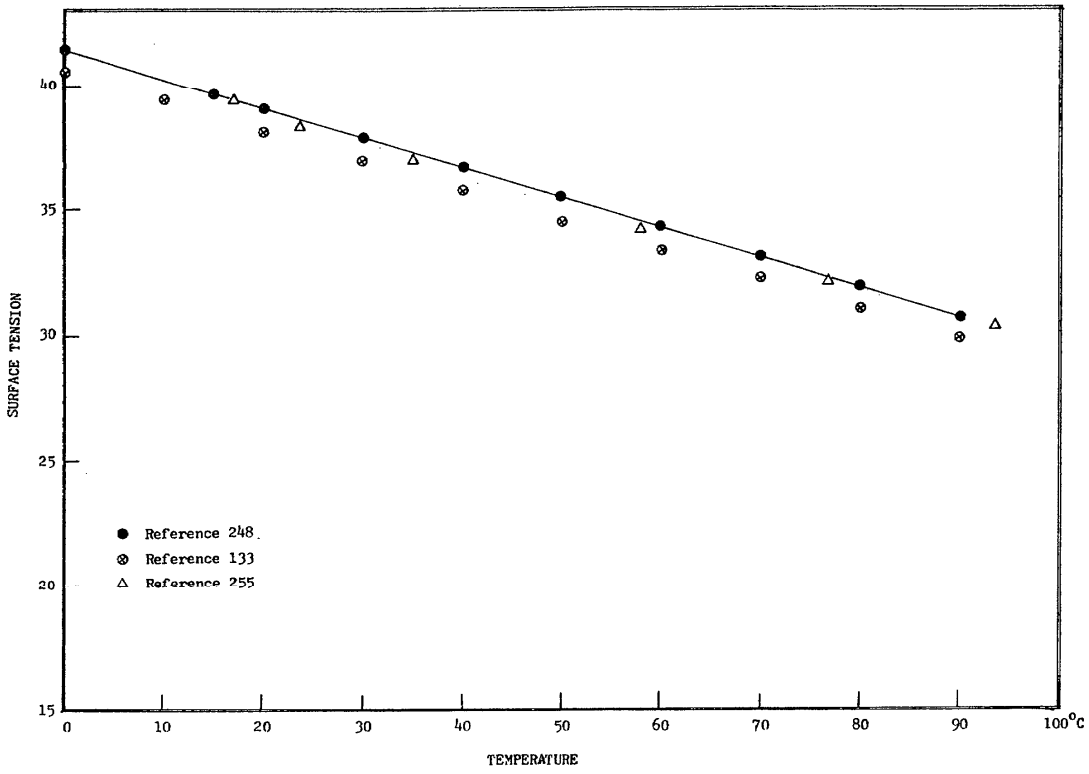


FIGURE 7. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for benzenethiol (solid line passes thru recommanded values).

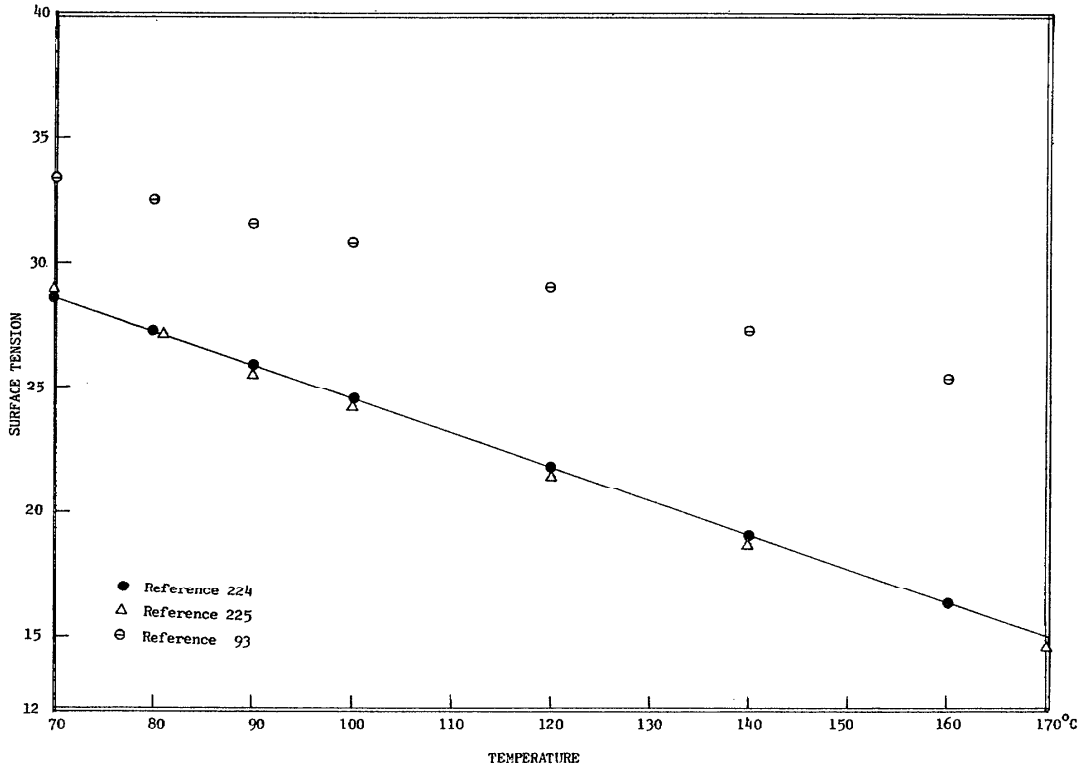


FIGURE 8. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for benzyl alcohol (solid line passes thru recommended values).

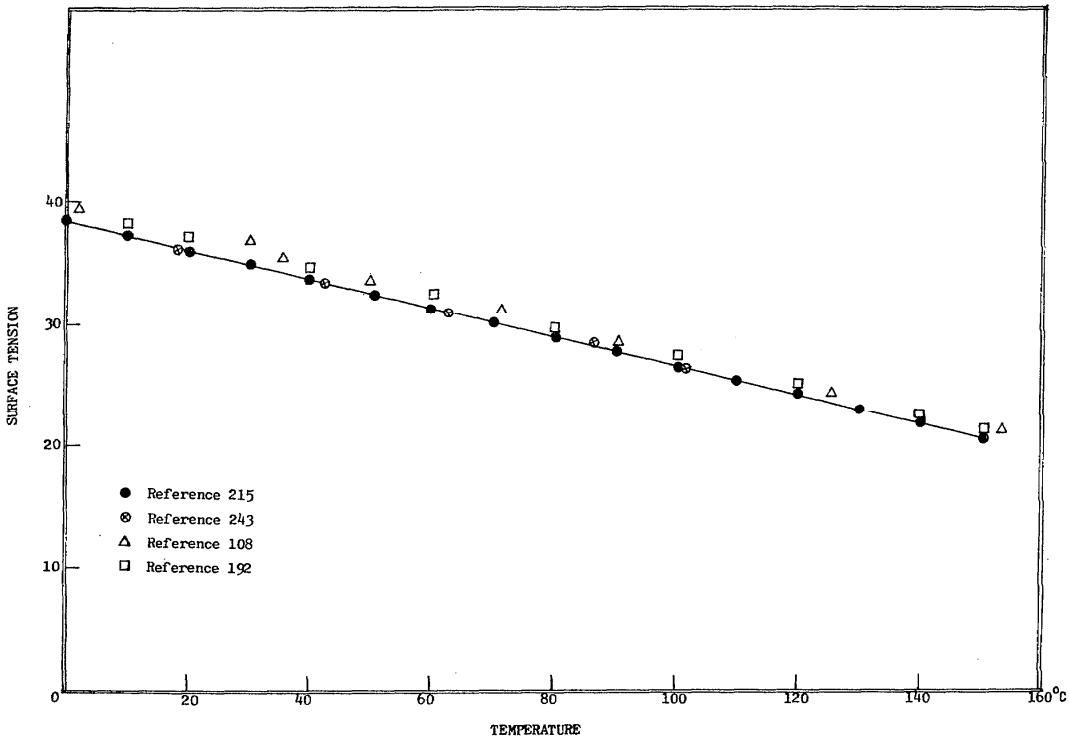


FIGURE 9. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for bromobenzene (solid line passes thru recommended values).

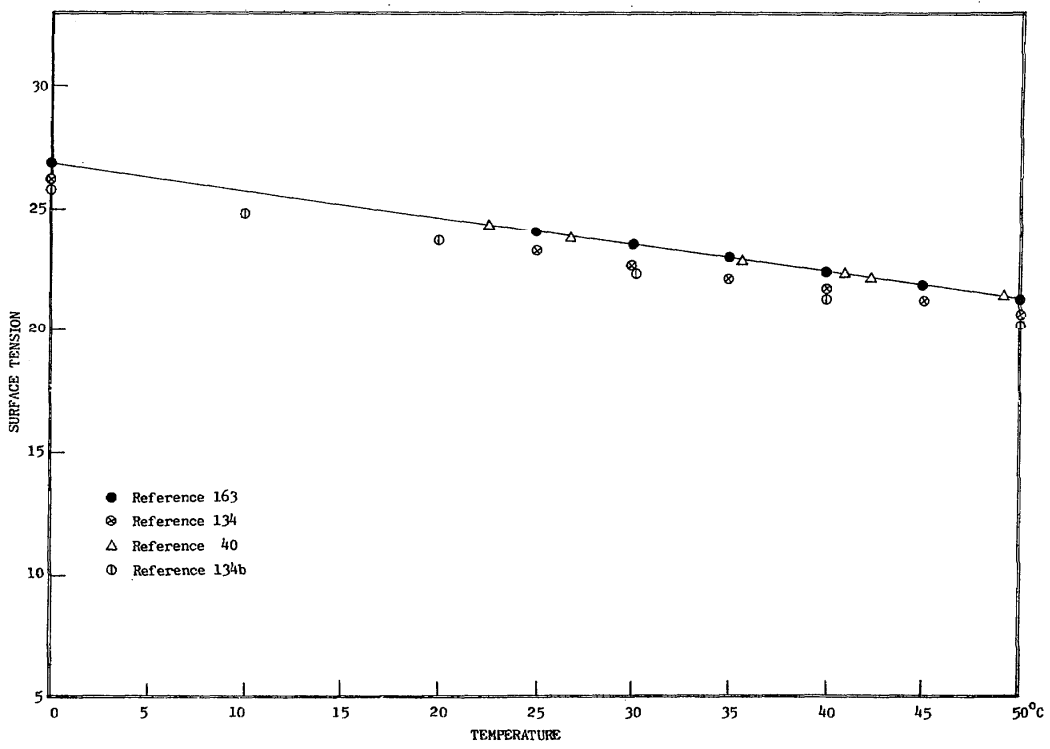
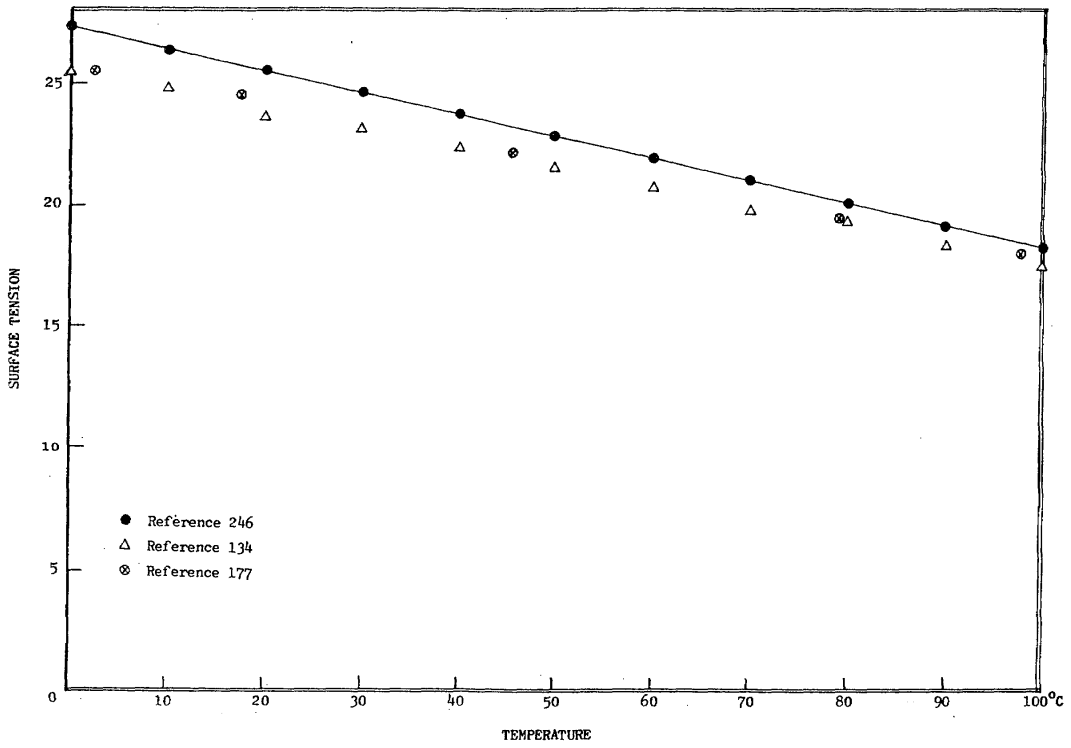
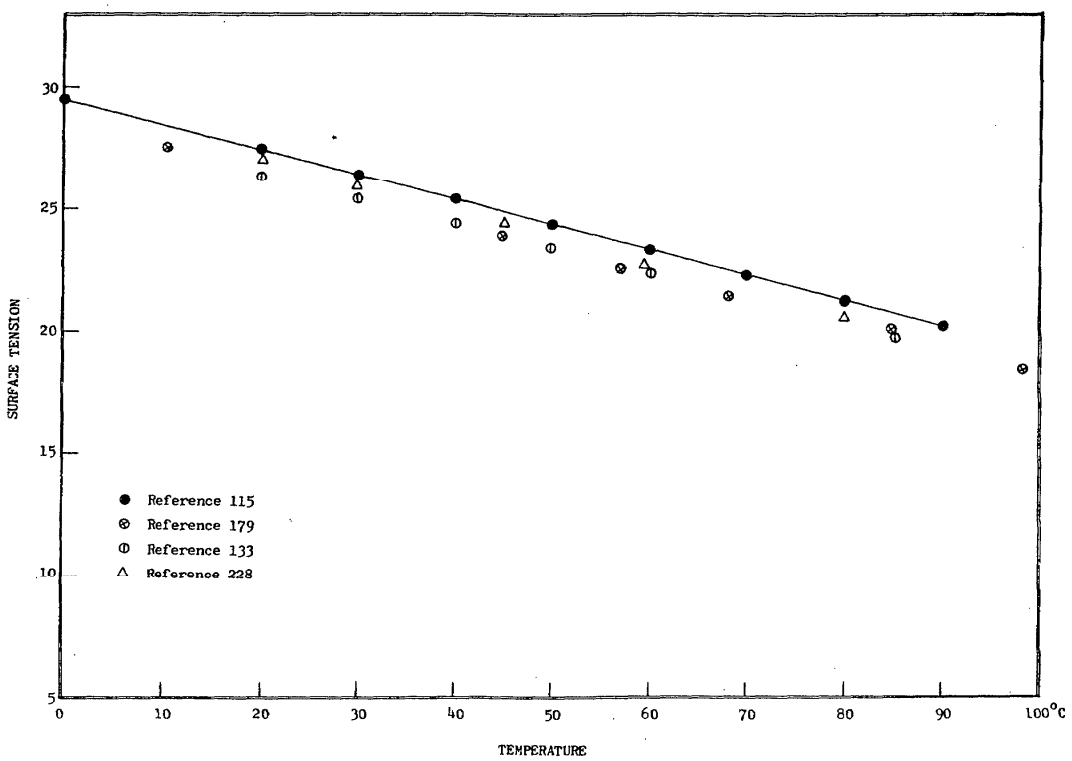


FIGURE 10. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for 2-butanone (solid line passes thru recommended values).



IGURE 11. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for butyl alcohol (solid line passes thru recommended values).



GURE 12. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for butyronitrile (solid line passes thru recommended values).

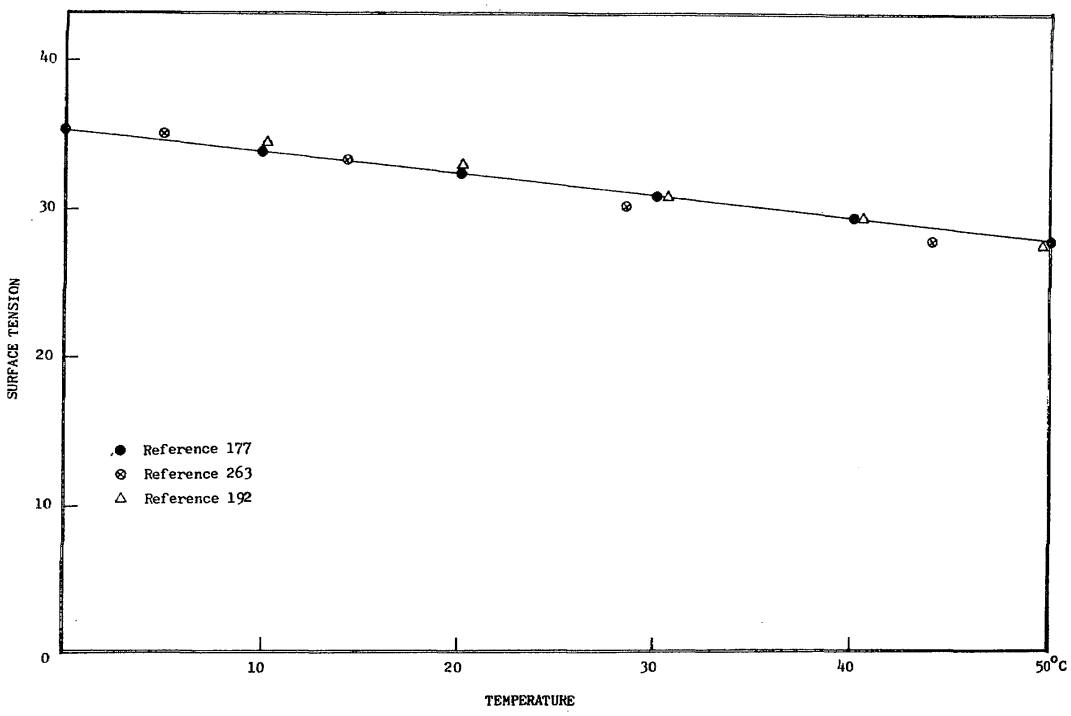


FIGURE 13. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurement for carbon disulfide (solid line passes thru recommended values).

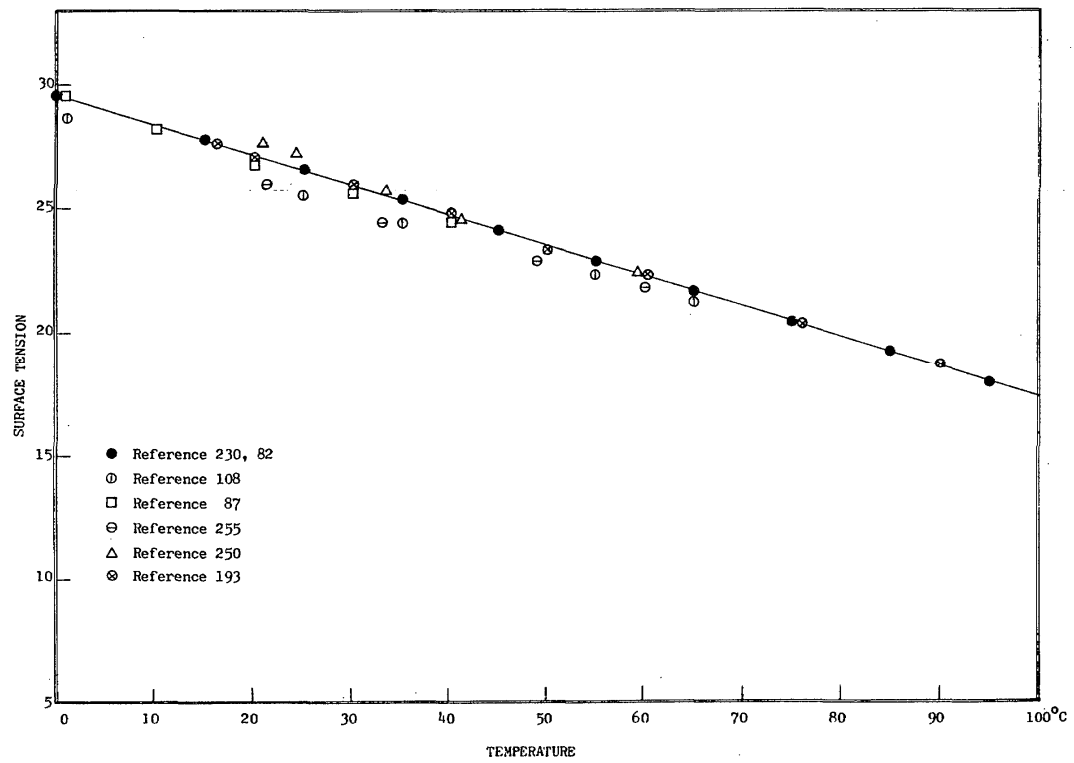


FIGURE 14. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for carbon tetrachloride (solid line passes thru recommended values).

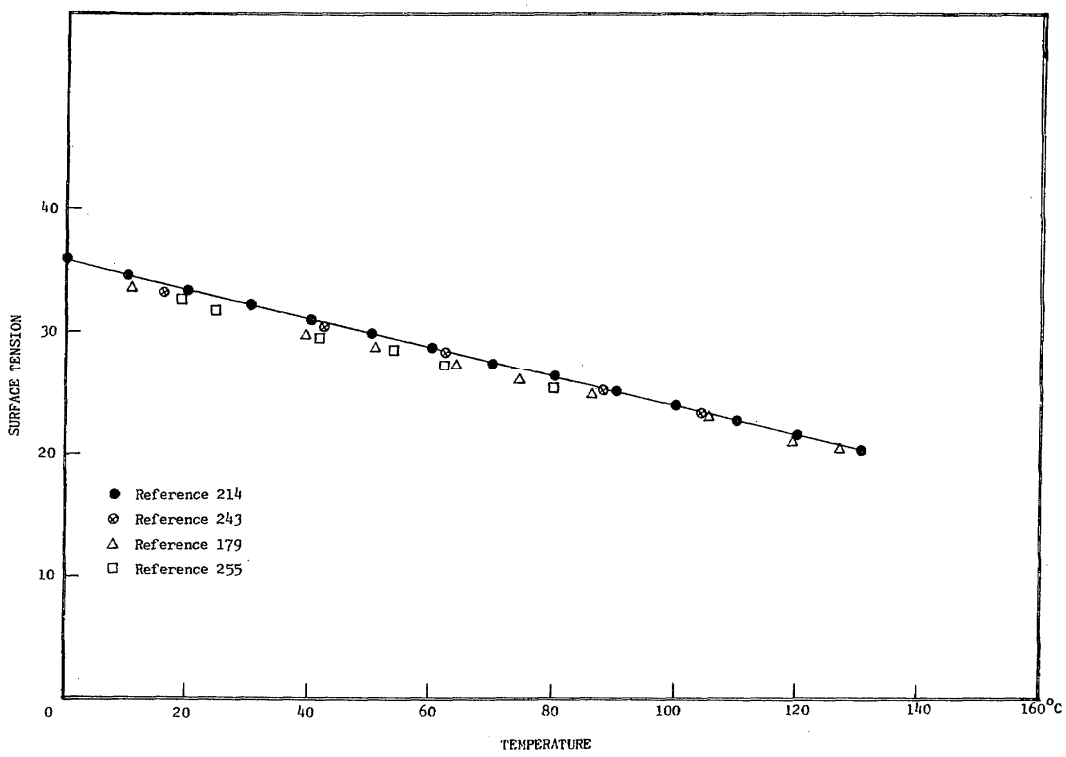


FIGURE 15. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for chlorobenzene (solid line passes thru recommended values).

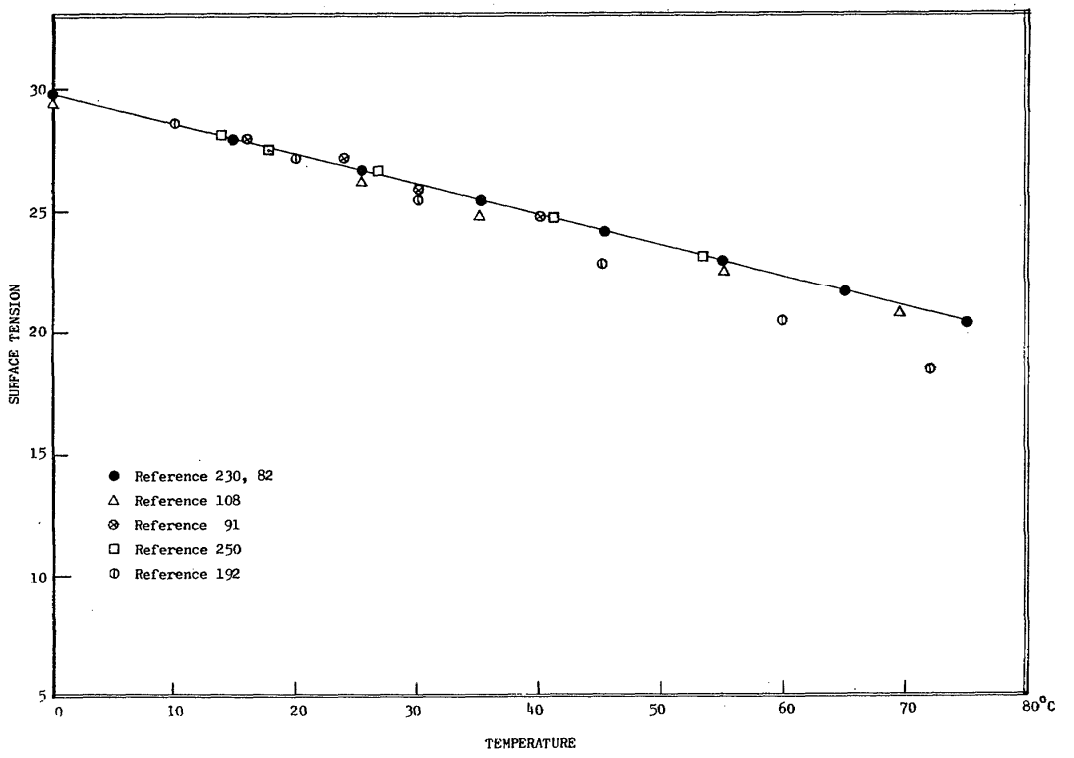


FIGURE 16. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for chloroform (solid line passes thru recommended values).

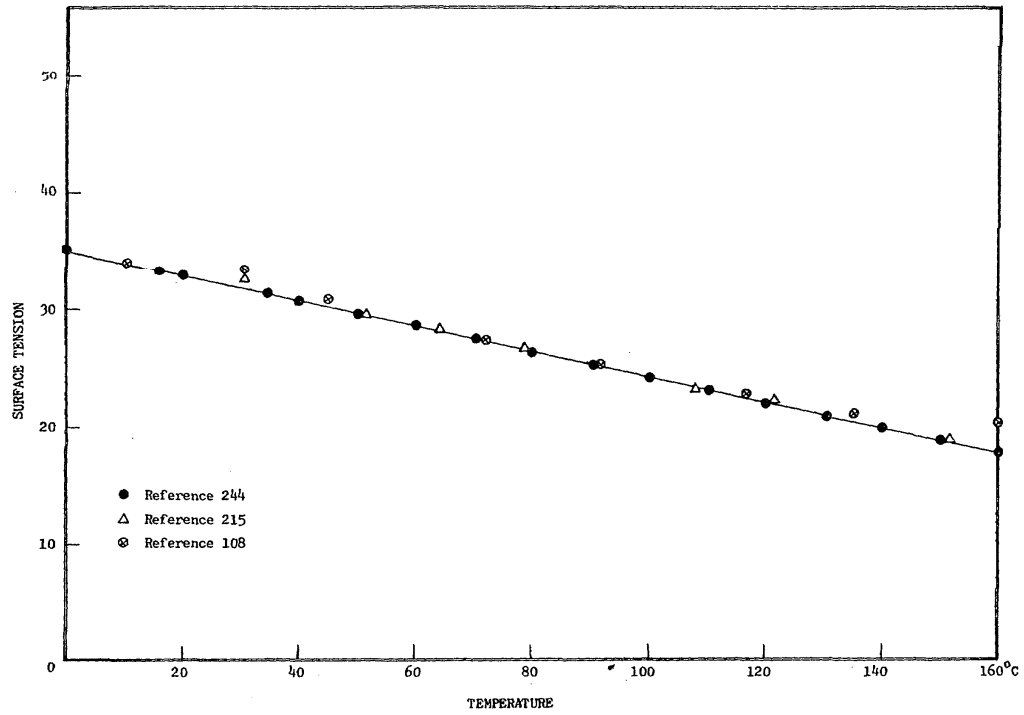


FIGURE 17. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurement for *p*-chlorotoluene (solid line passes thru recommended values).

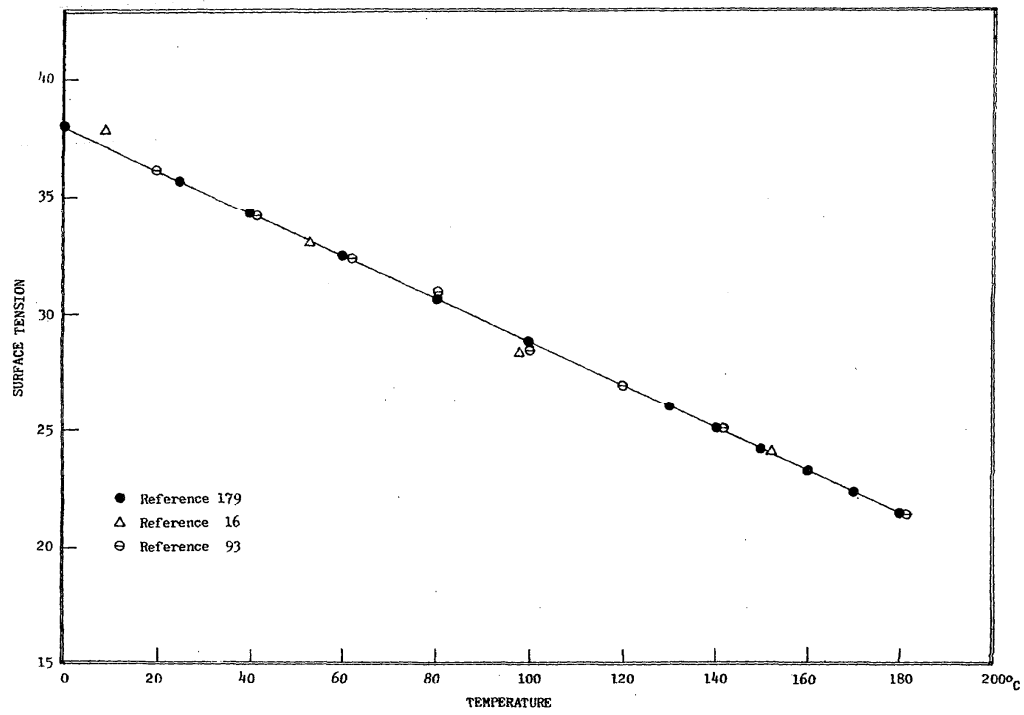


FIGURE 18. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for *m*-cresol (solid line passes thru recommended values).

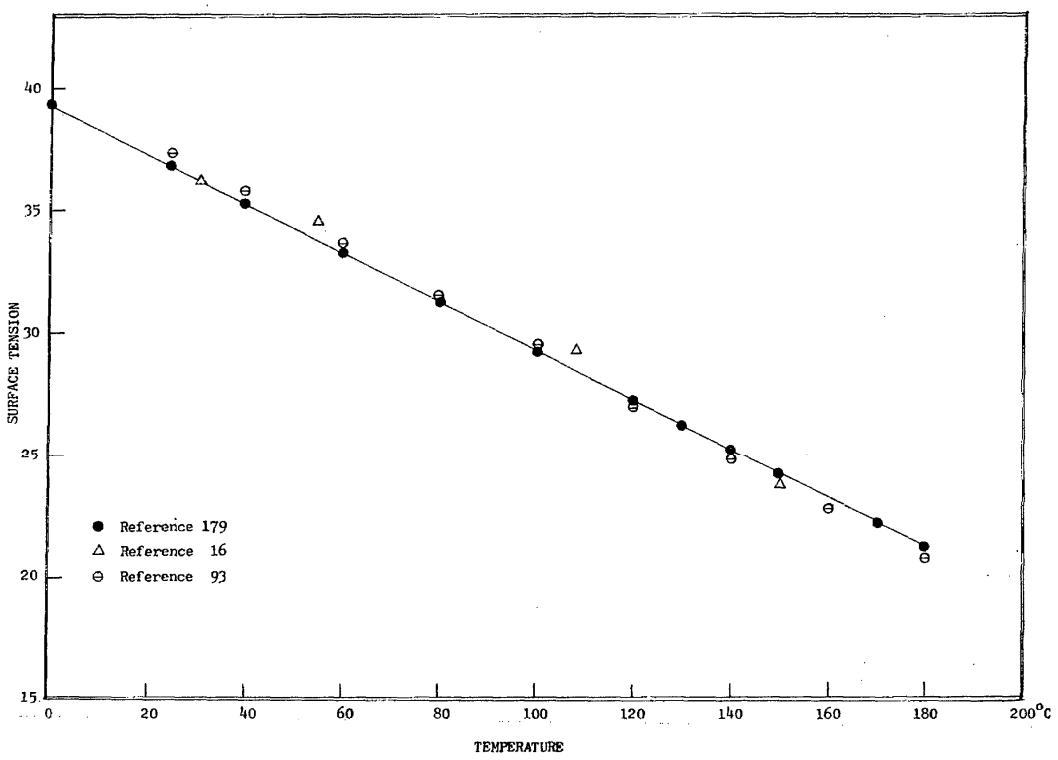


FIGURE 19. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurement for *o*-cresol (solid line passes thru recommended values).

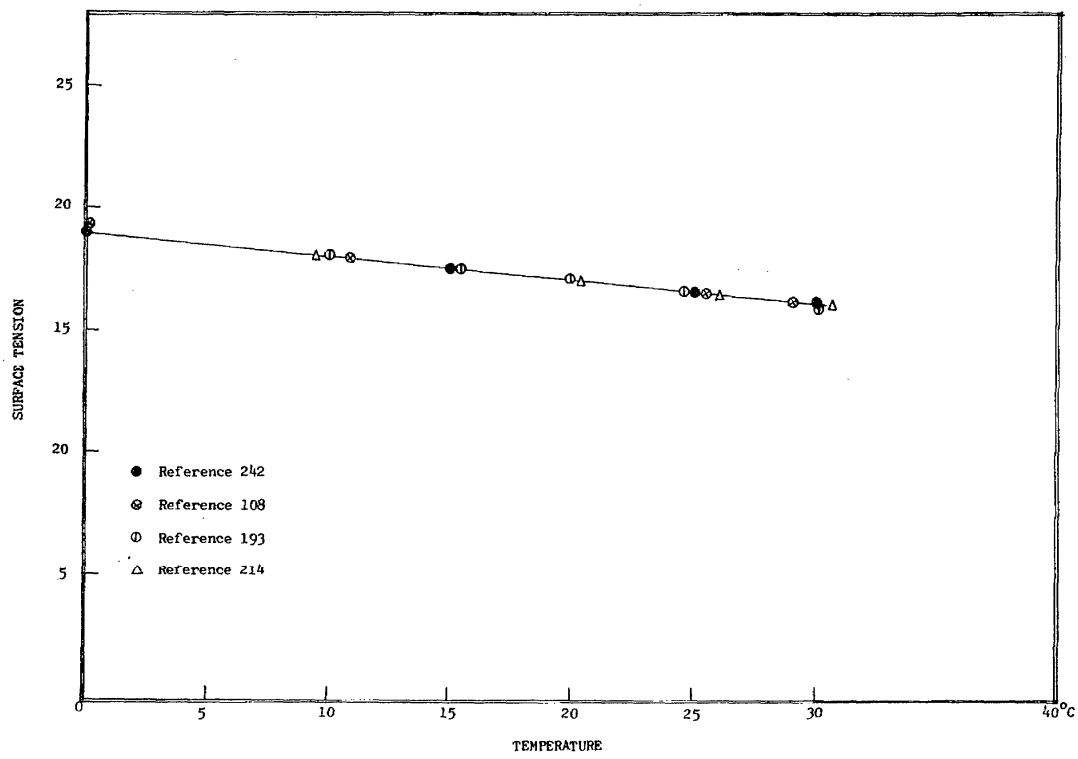


FIGURE 20. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for diethyl ether (solid line passes thru recommended values).

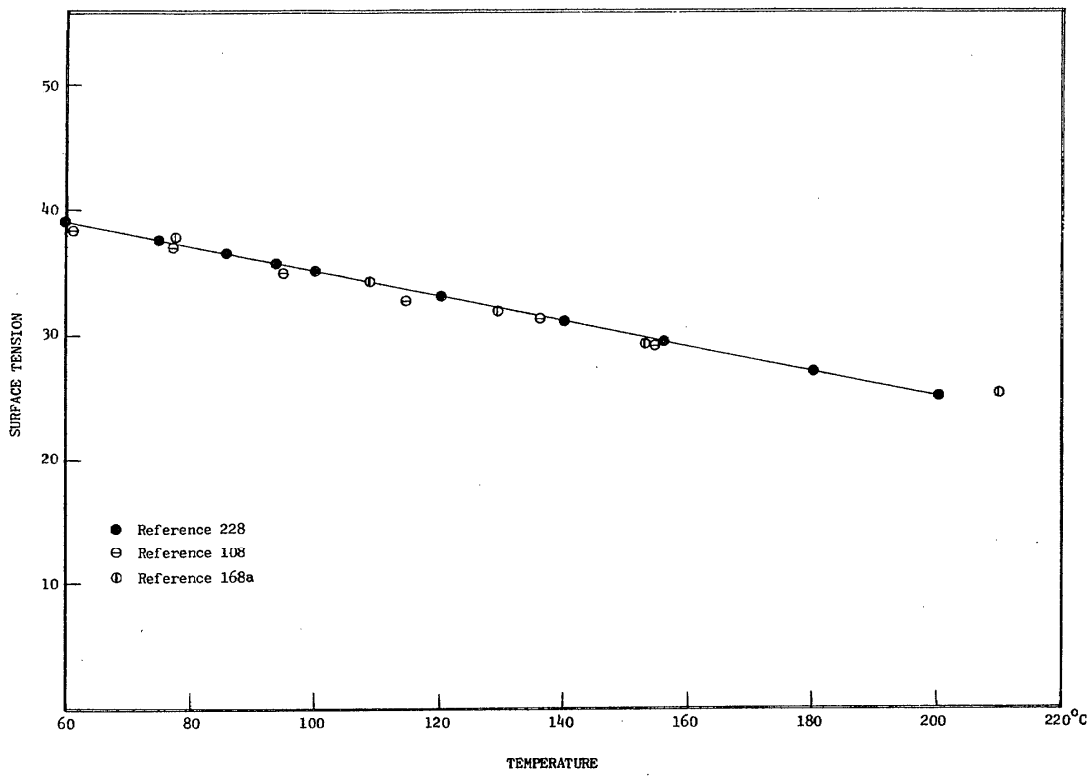


FIGURE 21. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for diphenylamine (solid line passes thru recommended values).

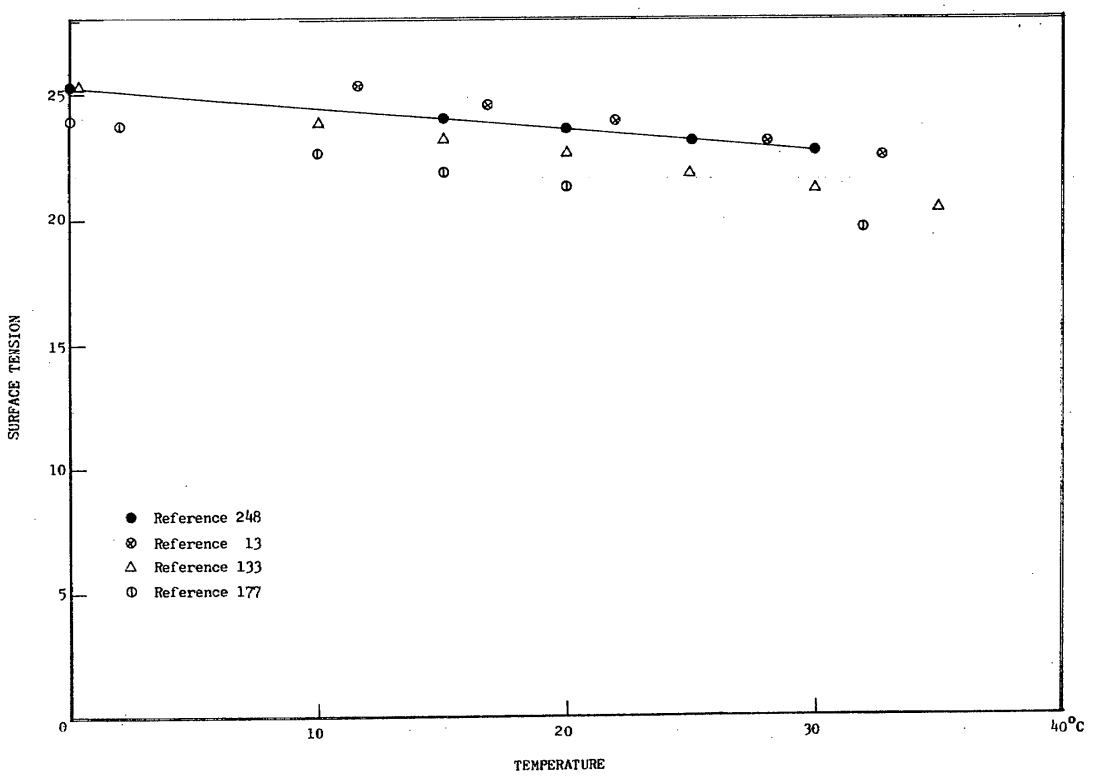


FIGURE 22. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for ethanethiol (solid line passes thru recommended values).

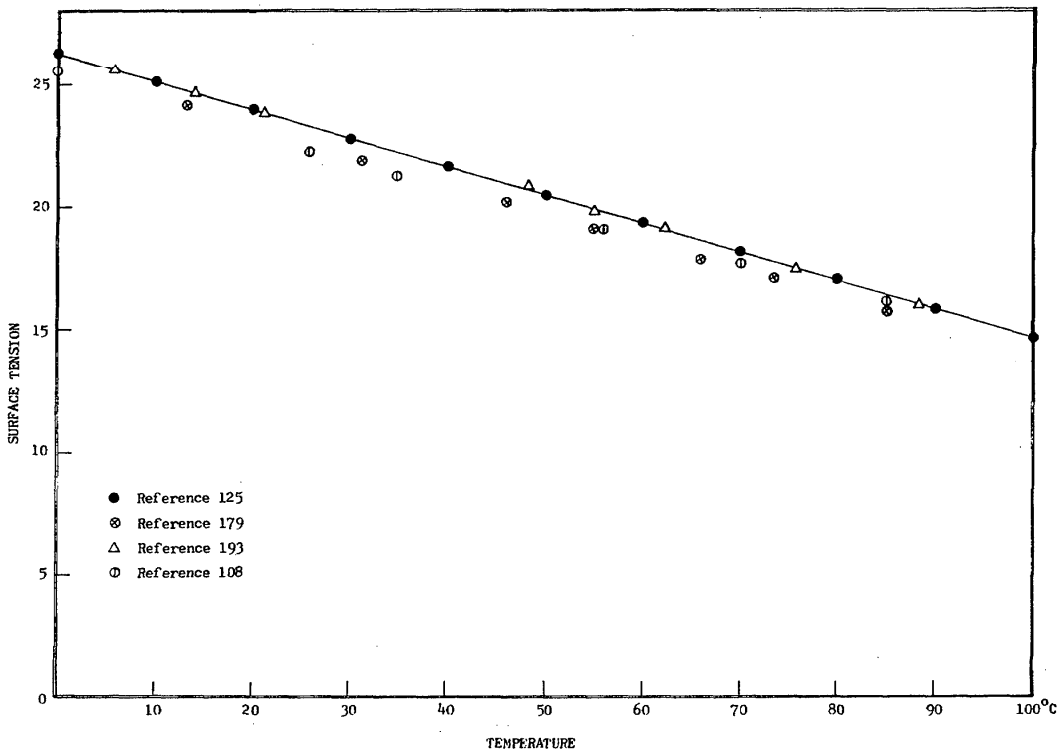


FIGURE 23. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for ethyl acetate (solid line passes thru recommended values).

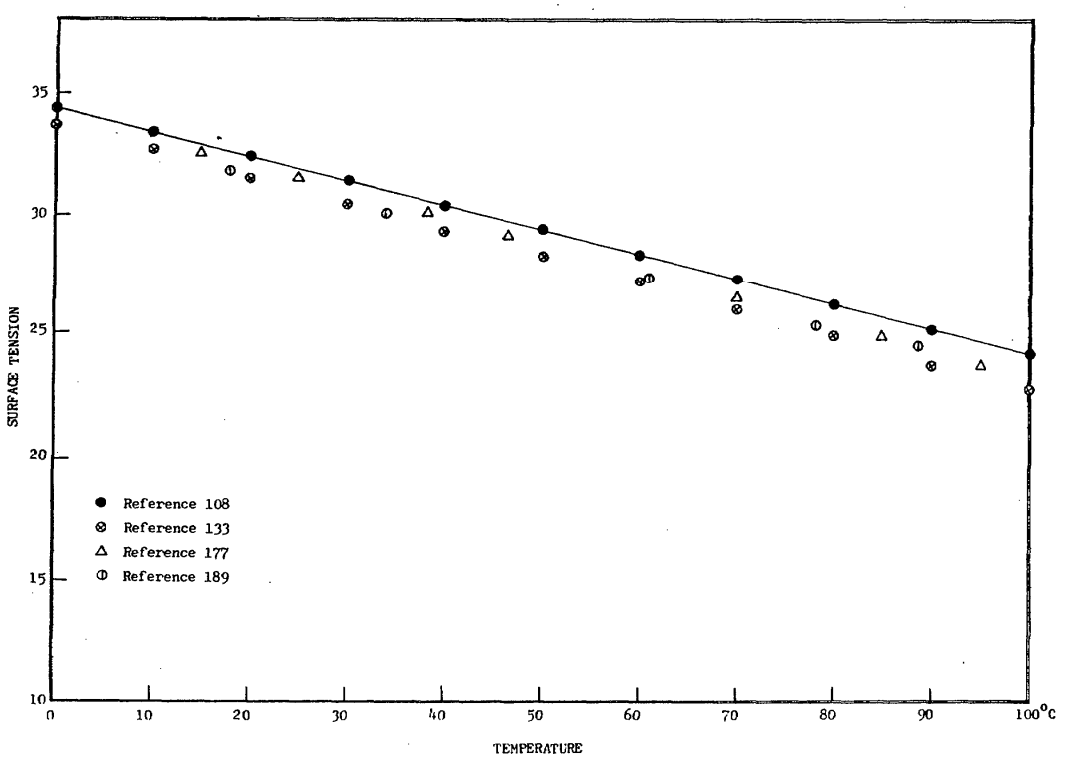


FIGURE 24. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for ethyl acetoacetate (solid line passes thru recommended values).

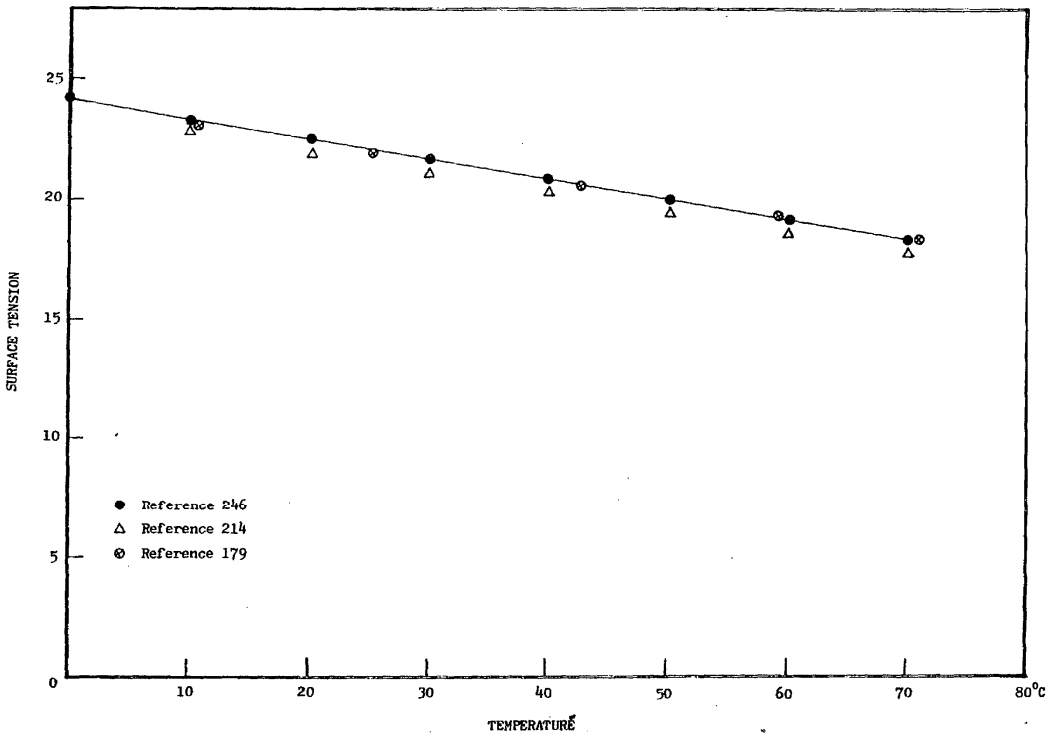


FIGURE 25. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for ethyl alcohol (solid line passes thru recommended values).

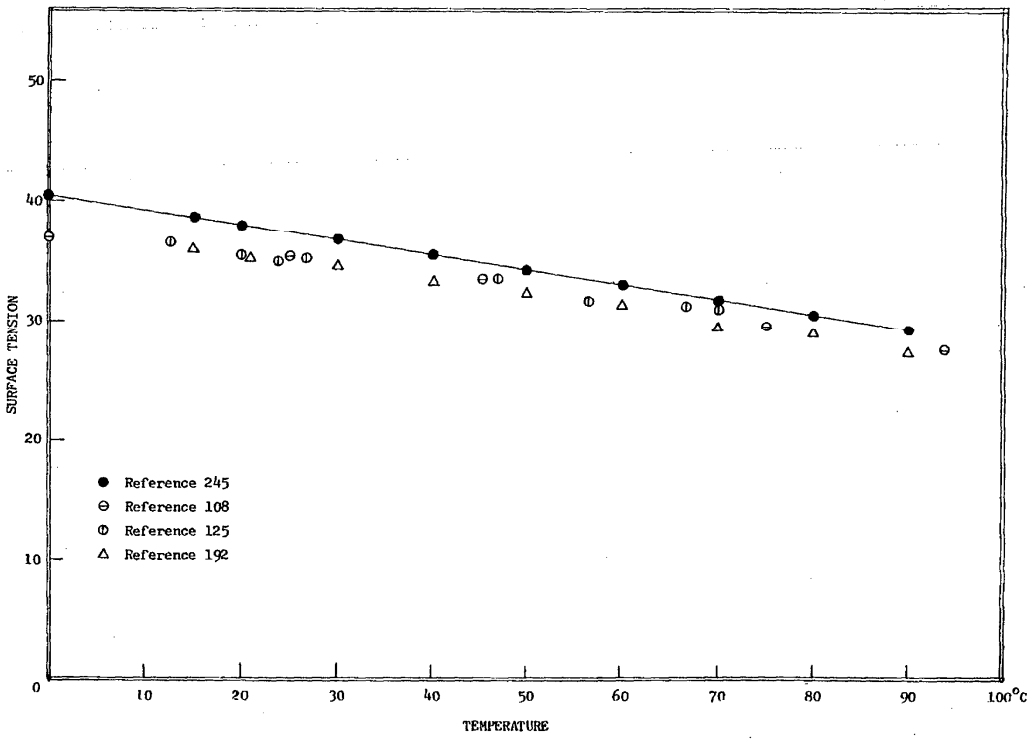


FIGURE 26. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for ethyl benzoate (solid line passes thru recommended values).

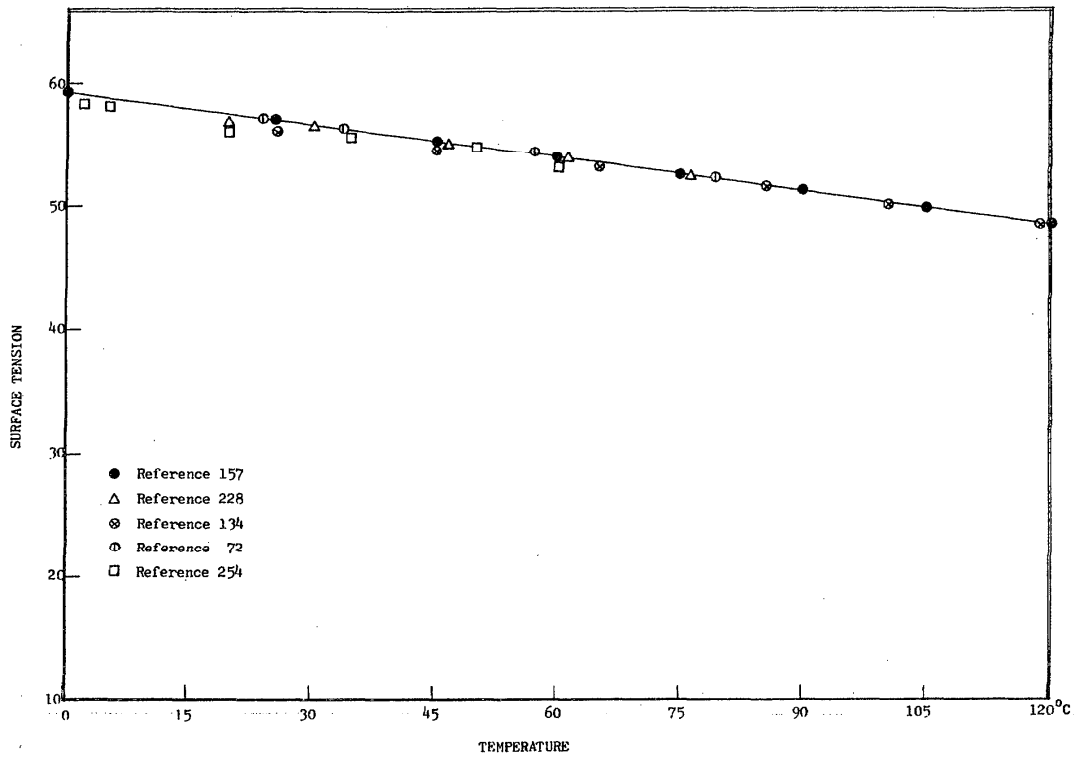


FIGURE 27. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for formamide (solid line passes thru recommended values).

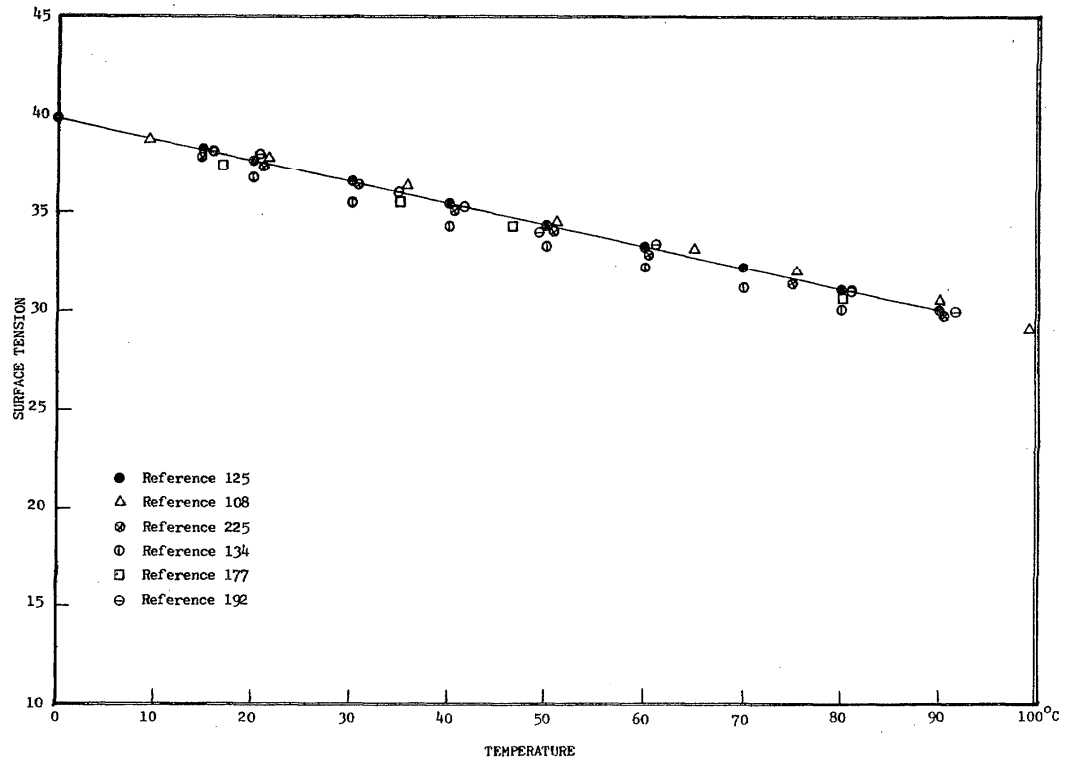


FIGURE 28. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for formic acid (solid line passes thru recommended values).

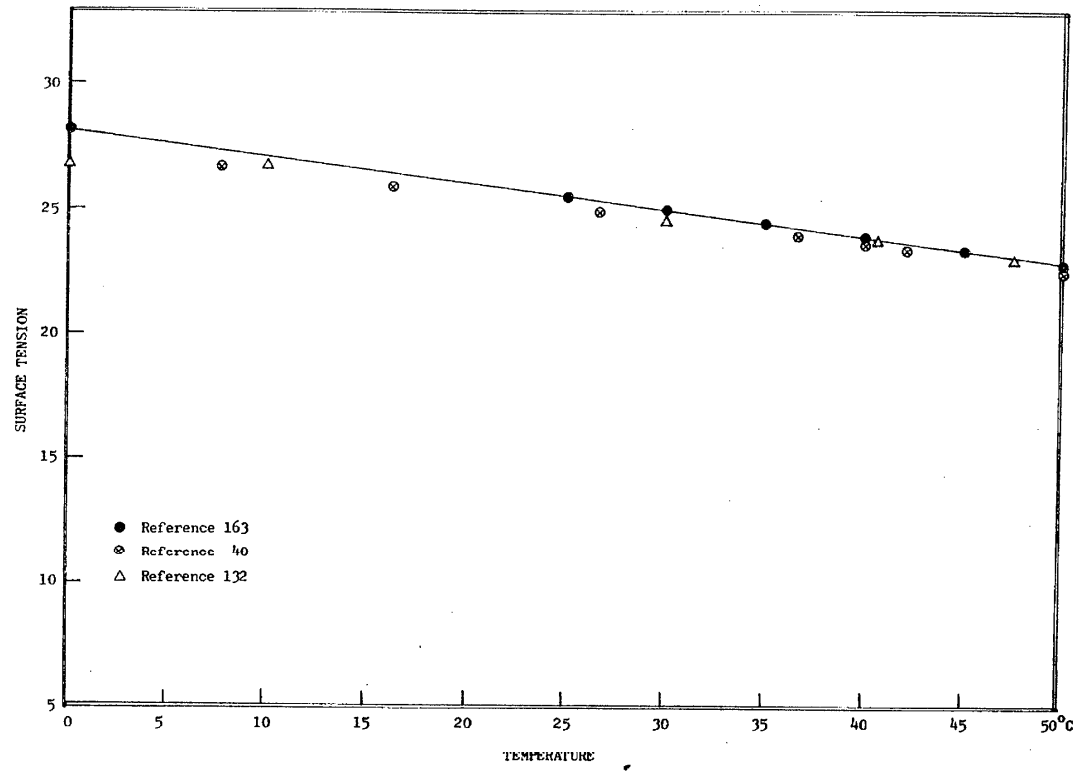


FIGURE 29. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for 4-heptanone (solid line passes thru recommended values).

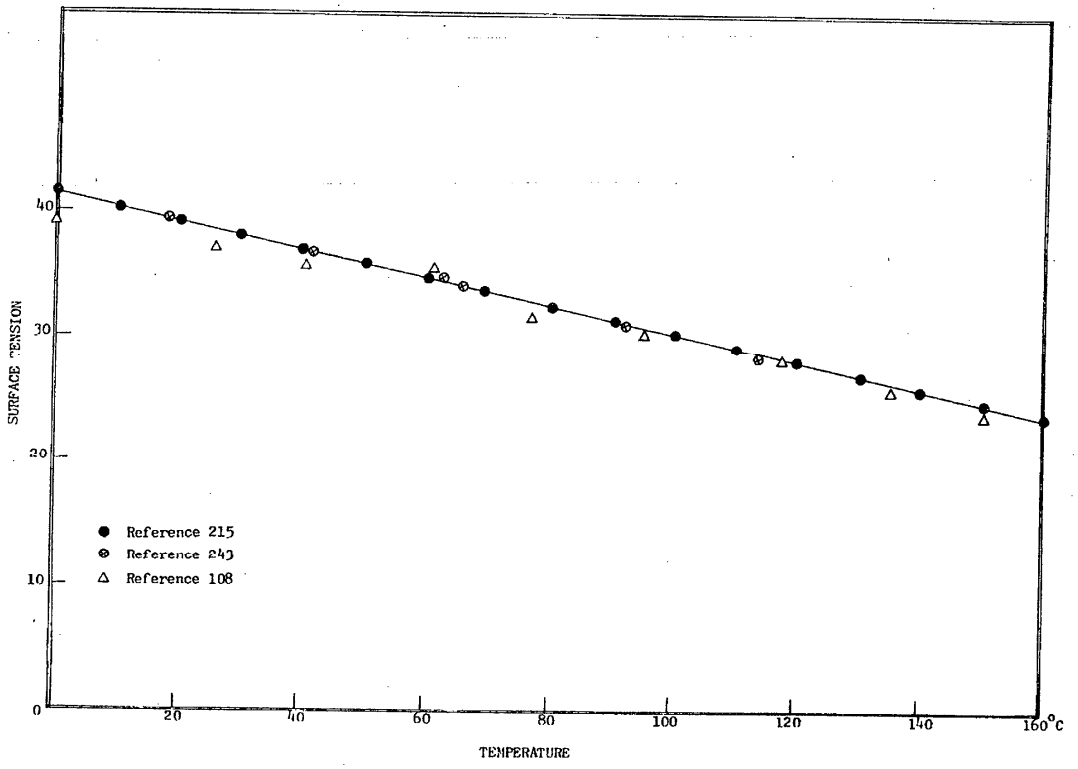


FIGURE 30. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for iodobenzene (solid line passes thru recommended values).

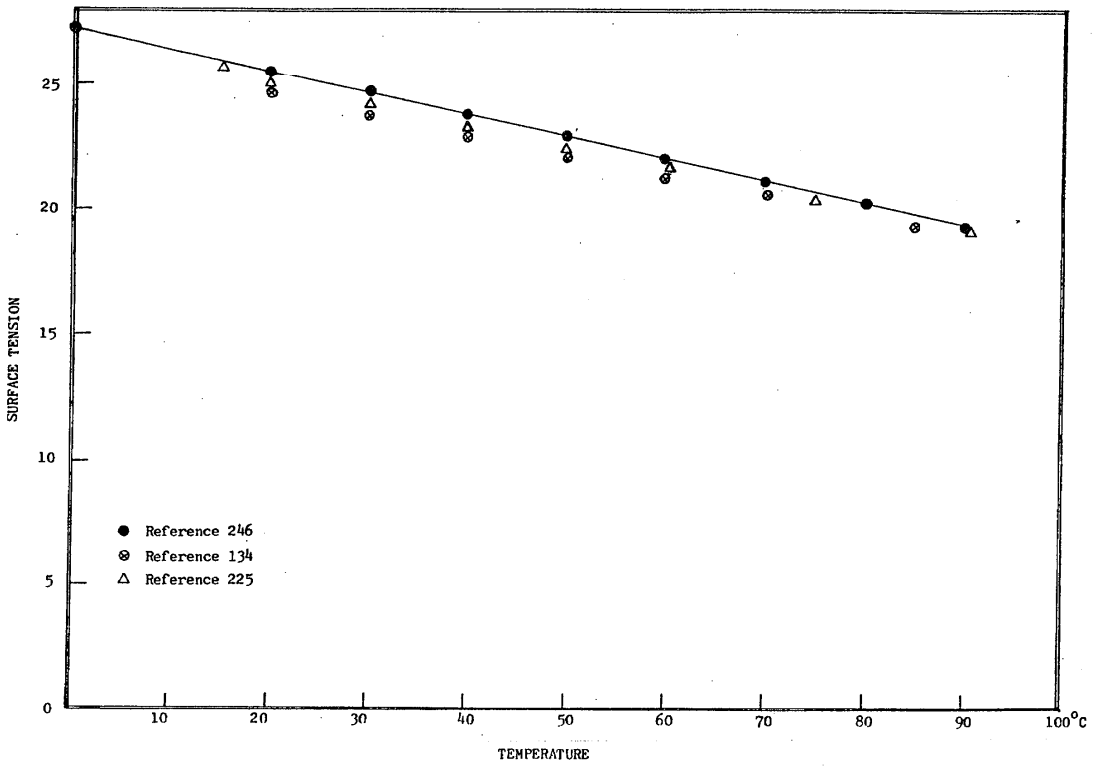


FIGURE 31. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for isobutyl alcohol (solid line passes thru recommended values).

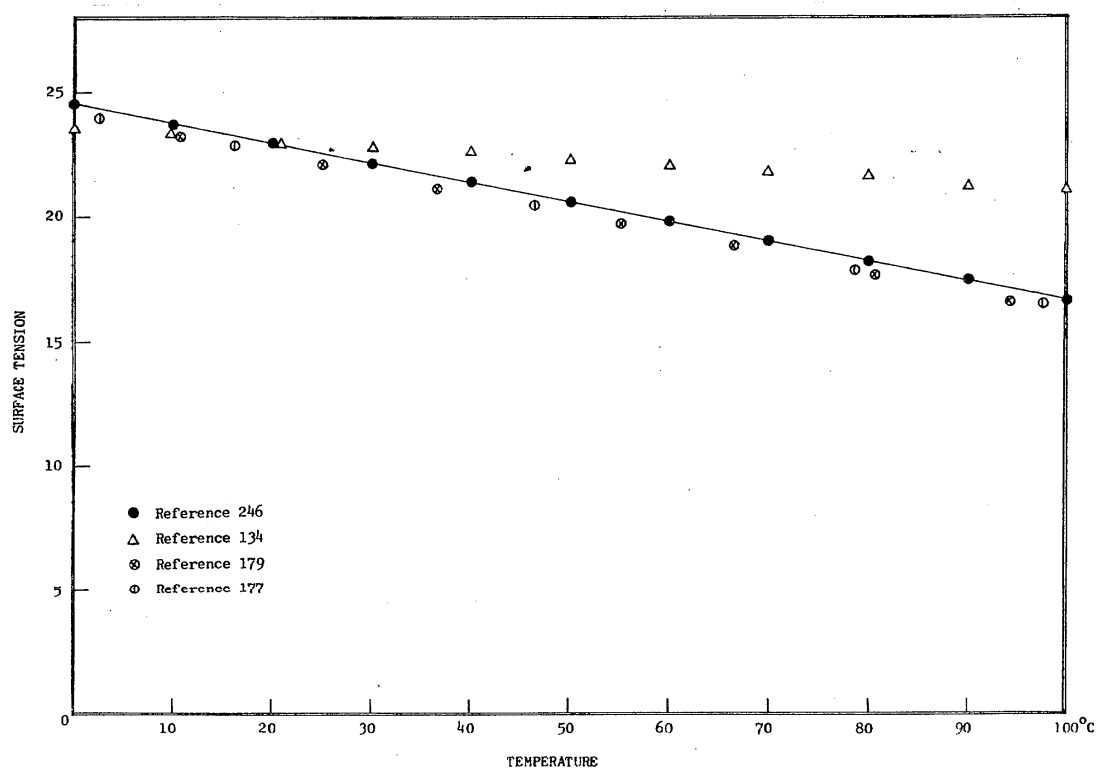


FIGURE 32. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for isovaleric acid (solid line passes thru recommended values).

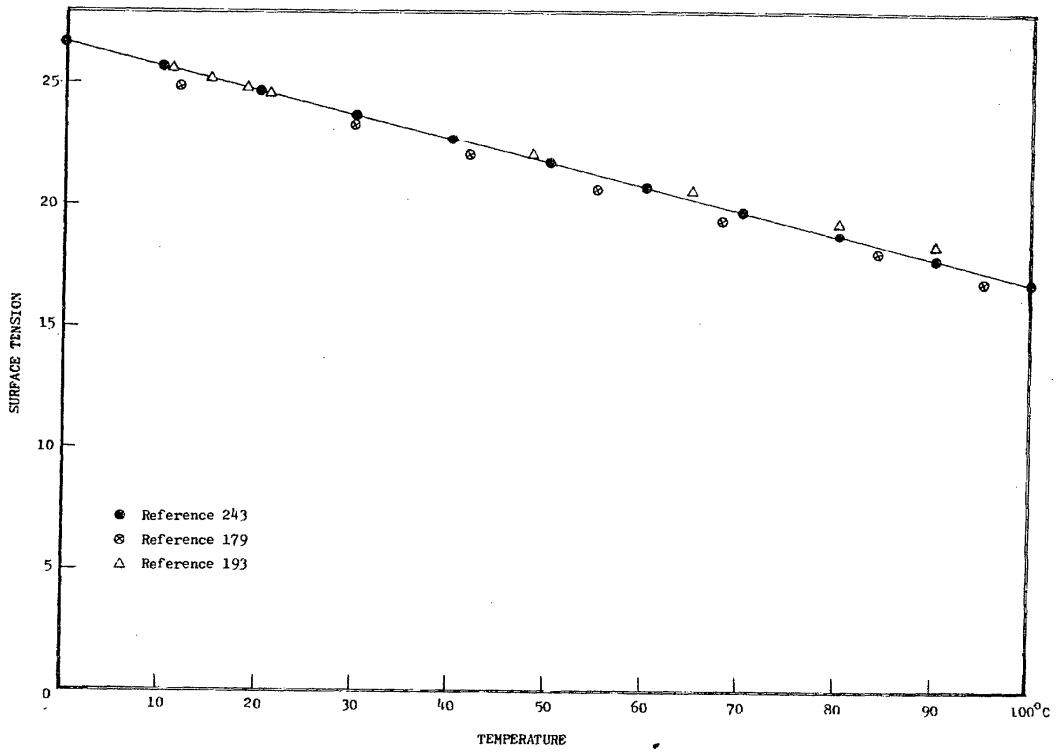


FIGURE 33. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurement for 3-methylbutanol (solid line passes thru recommended values).

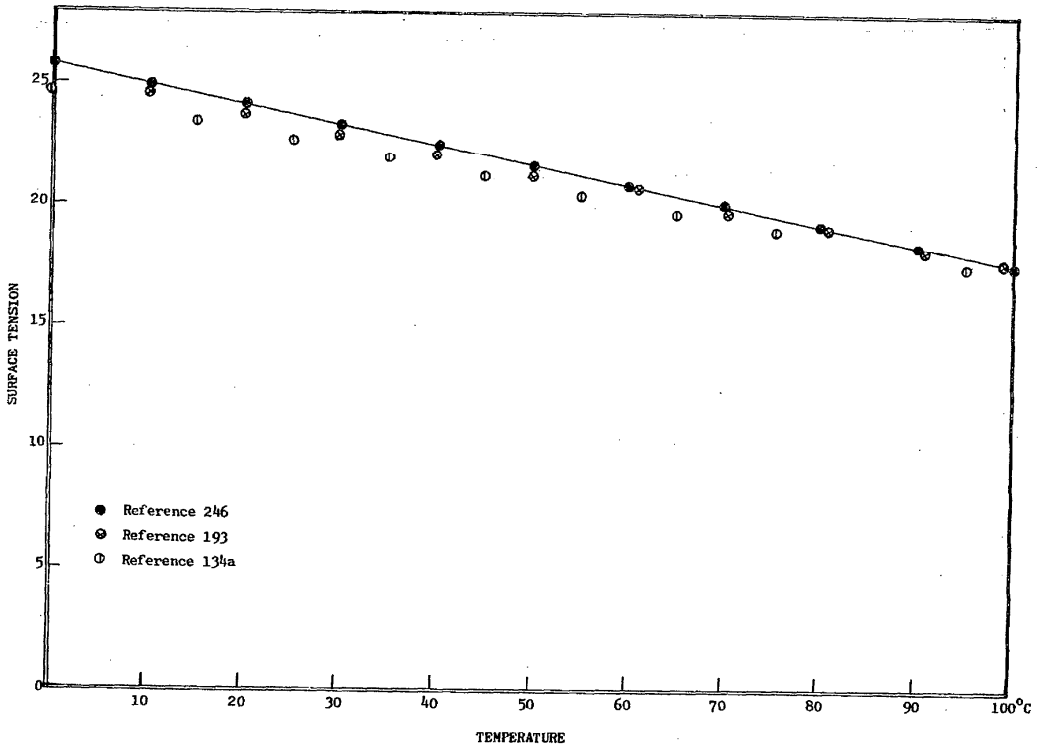


FIGURE 34. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for 3-methylbutyl acetate (solid line passes thru recommended values).

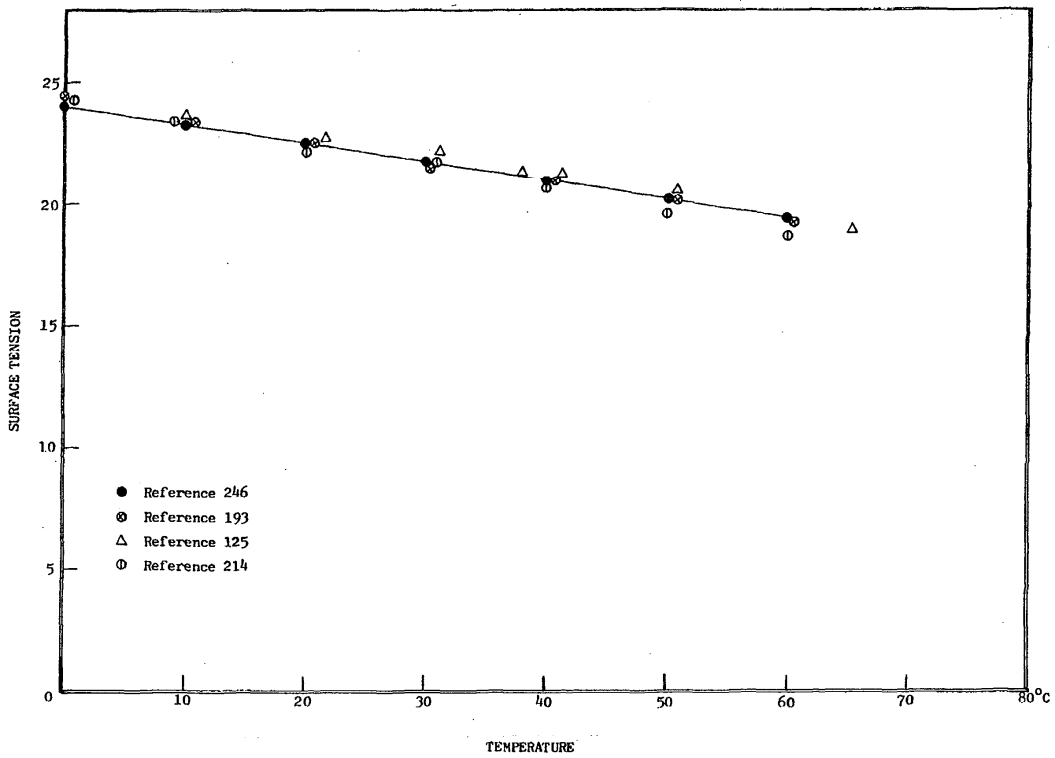


FIGURE 35. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for methyl alcohol (solid line passes thru recommended values).

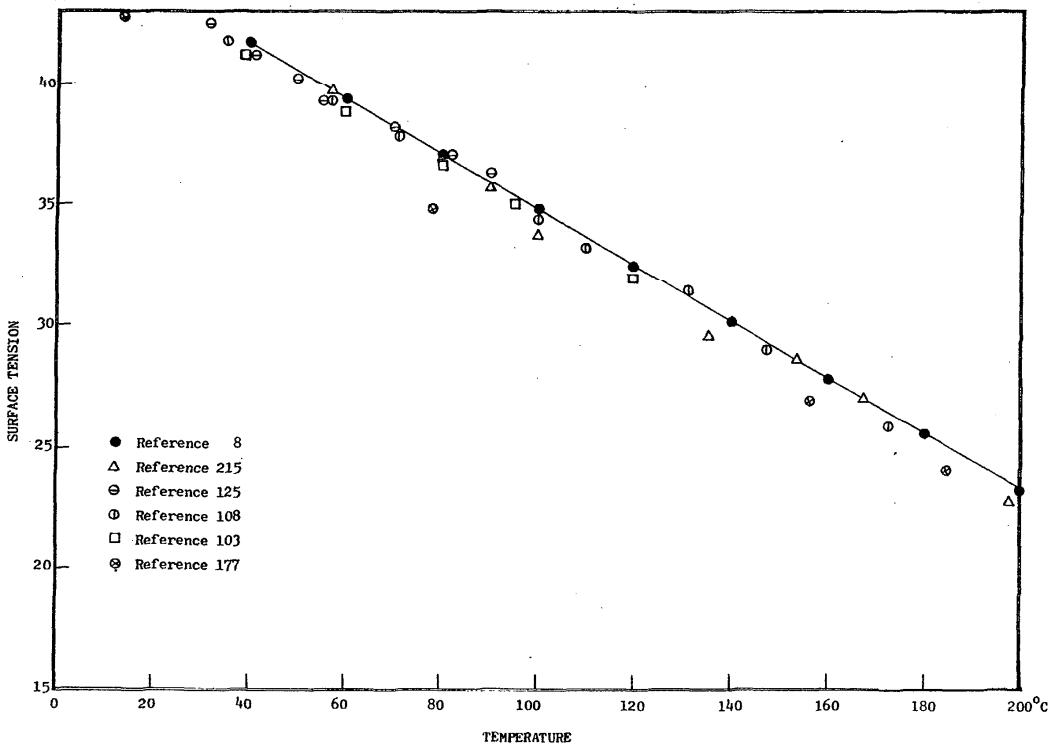


FIGURE 36. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for nitrobenzene (solid line passes thru recommended values).

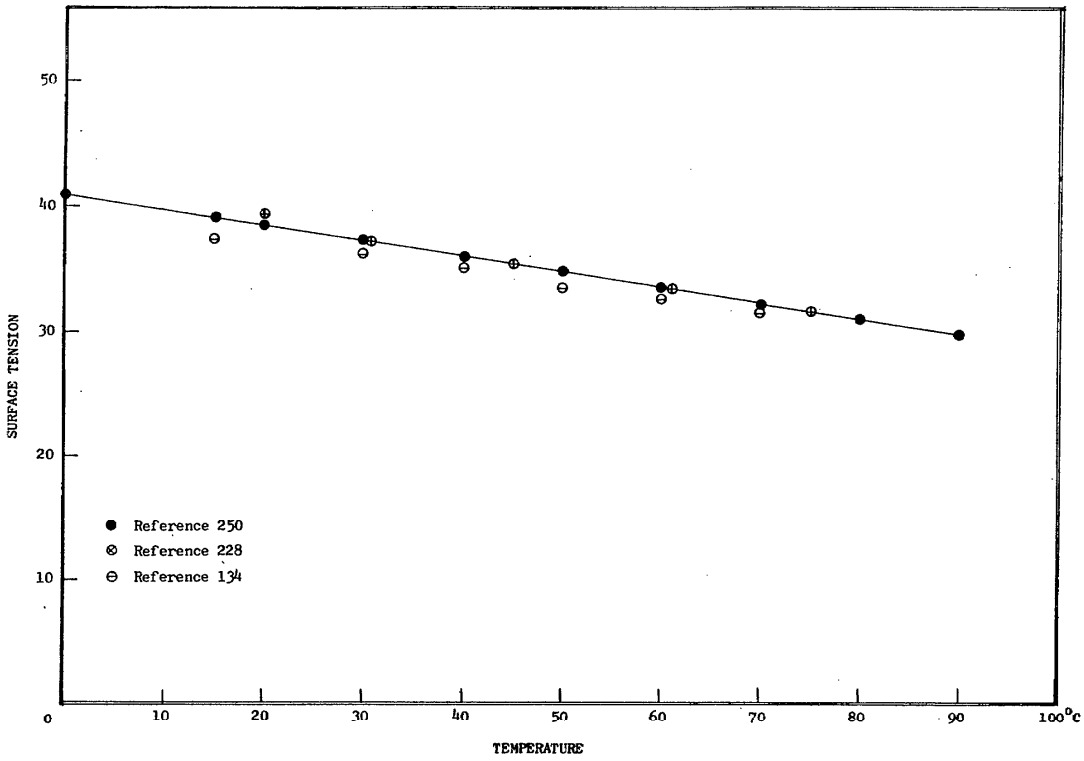


FIGURE 37. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements *N*-nitrosodimethylamine (solid line passes thru recommended values).

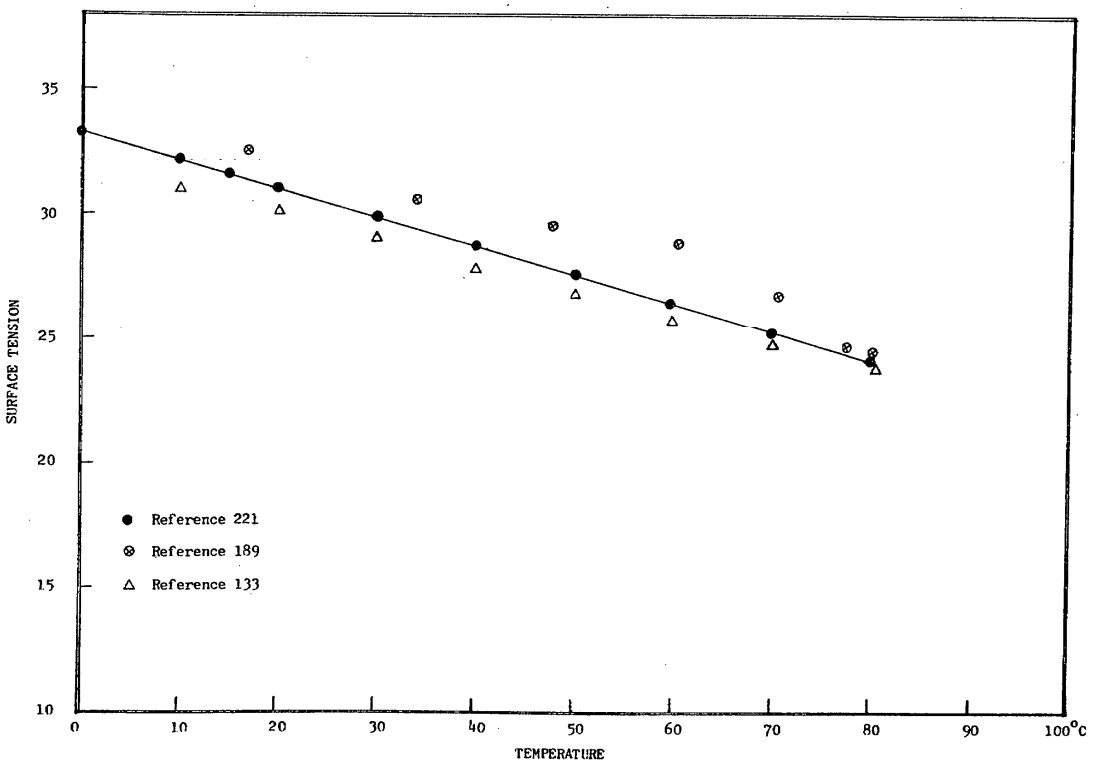


FIGURE 38. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for 2,4-pentanedione (solid line passes thru recommended values).

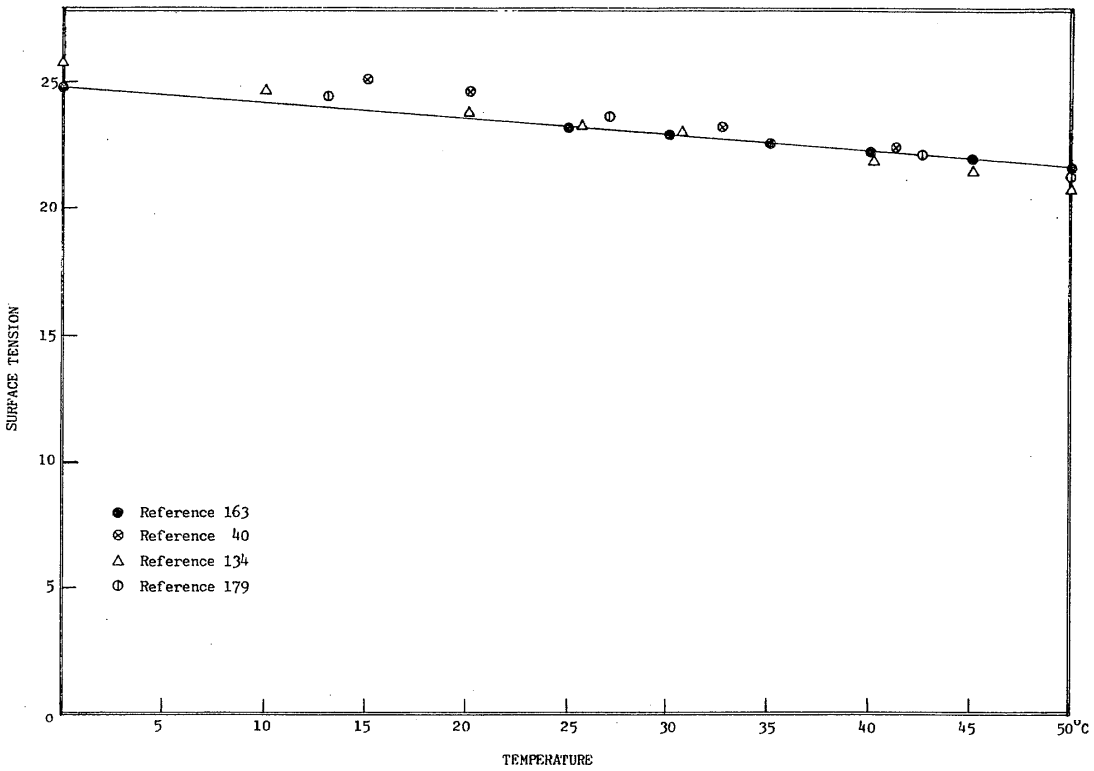


FIGURE 39. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measuremen for 2-pentanone (solid line passes thru recommended values).

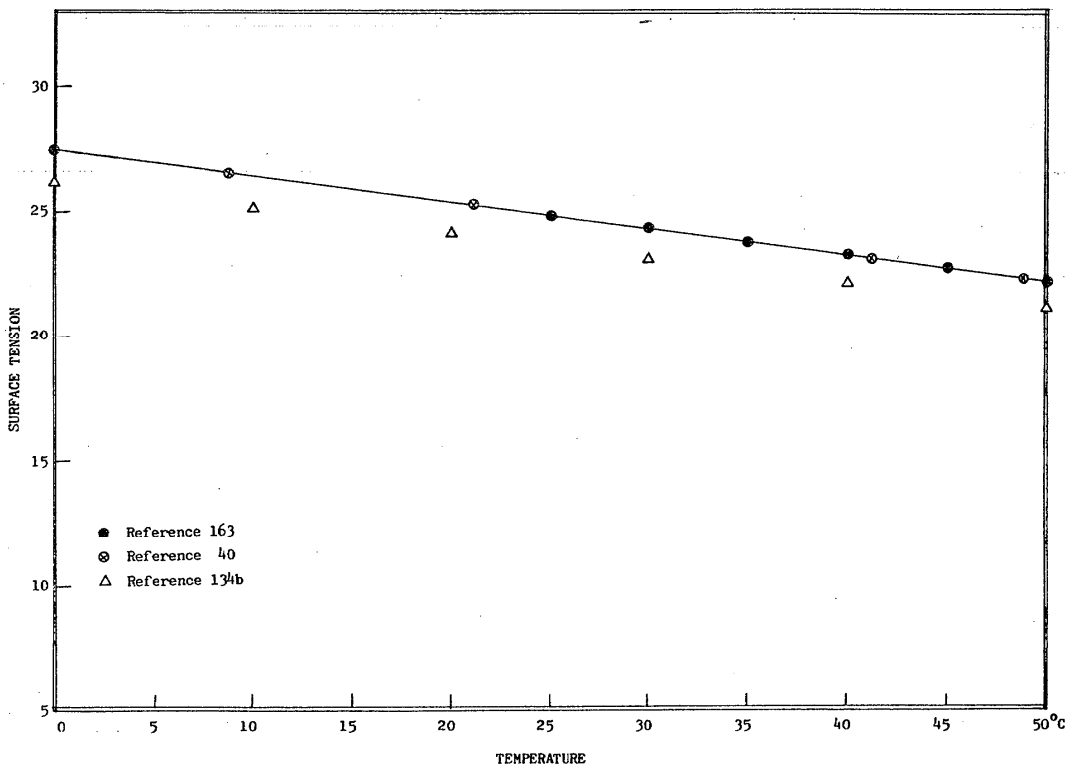


FIGURE 40. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measuremei for 3-pentanone (solid line passes thru recommended values).

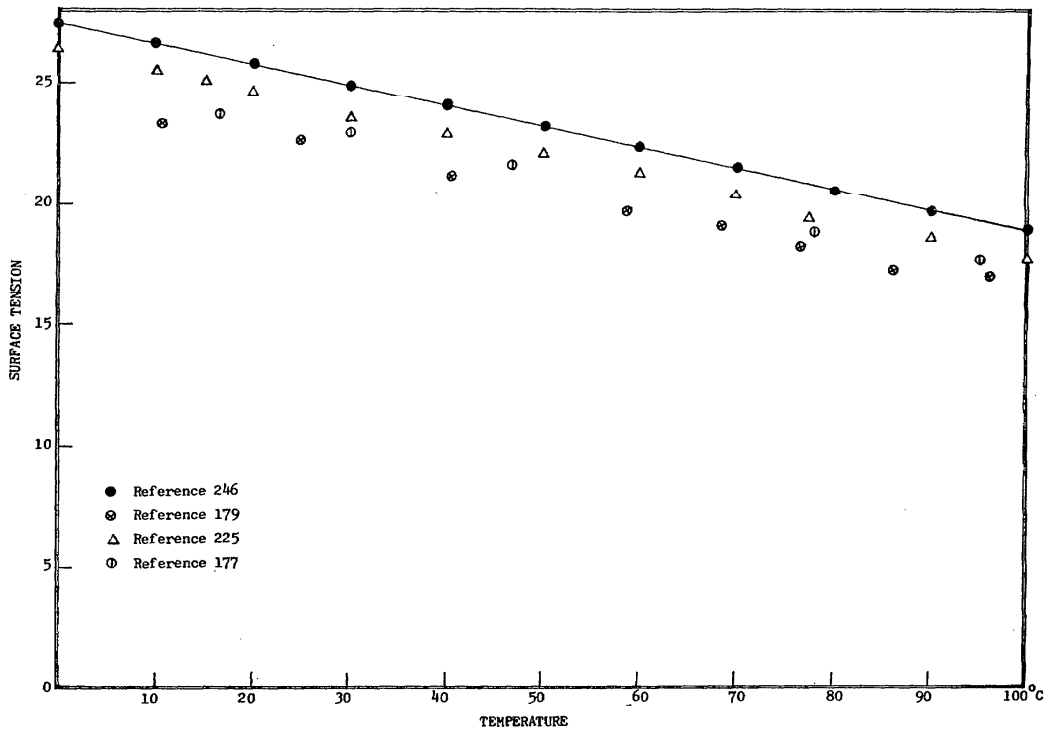


FIGURE 41. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for 1-pentanol (solid line passes thru recommended values).

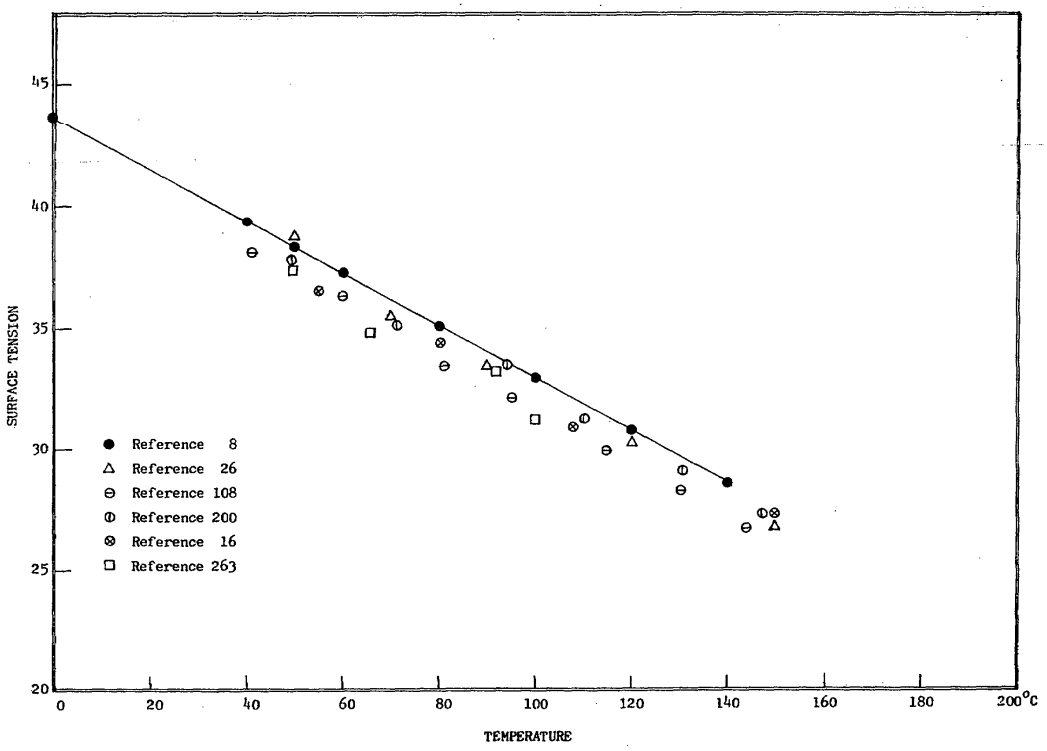


FIGURE 42. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for phenol (solid line passes thru recommended values).

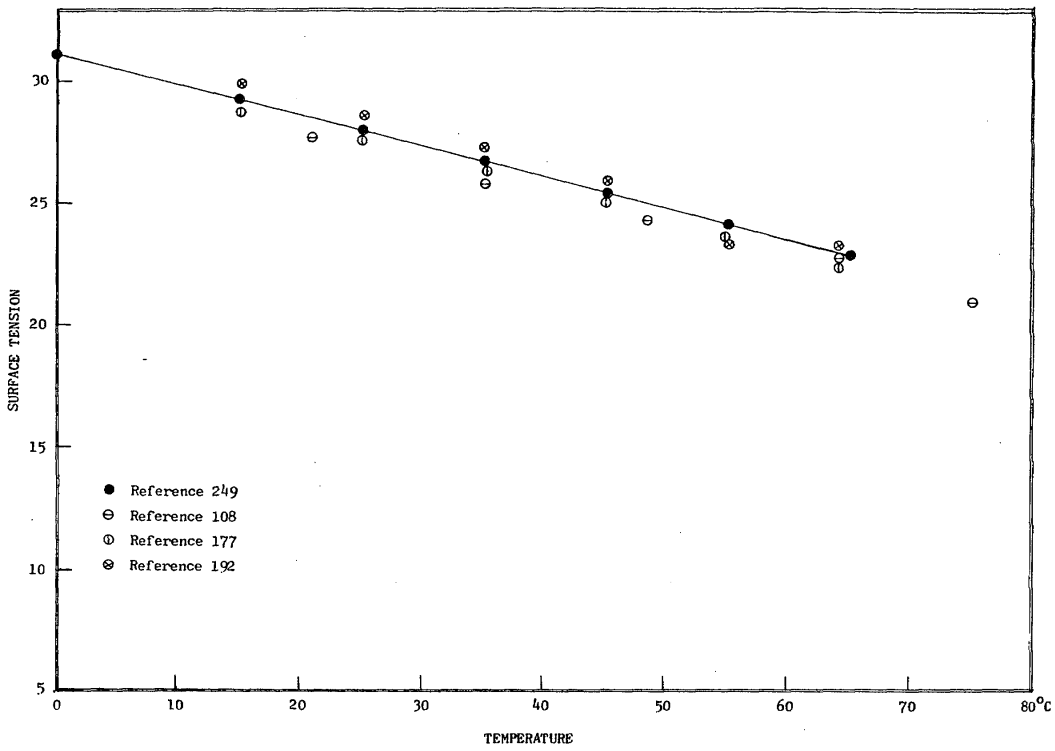


FIGURE 43. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for phosphorus trichloride (solid line passes thru recommended values).

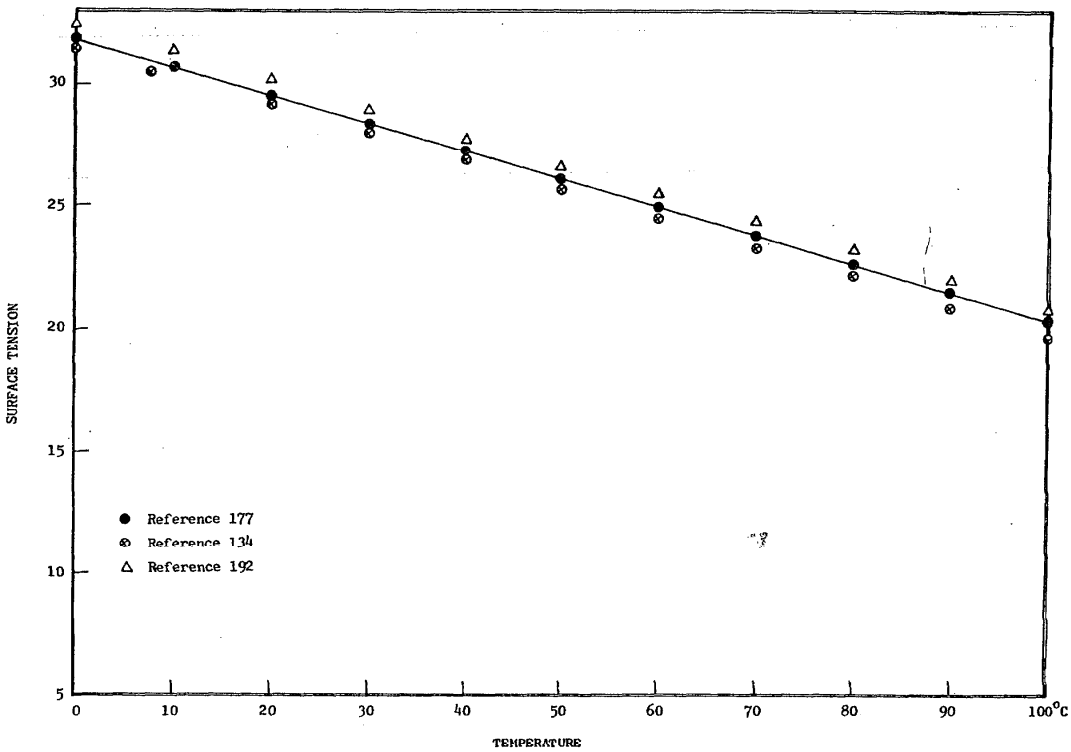


FIGURE 44. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for piperidine (solid line passes thru recommended values).

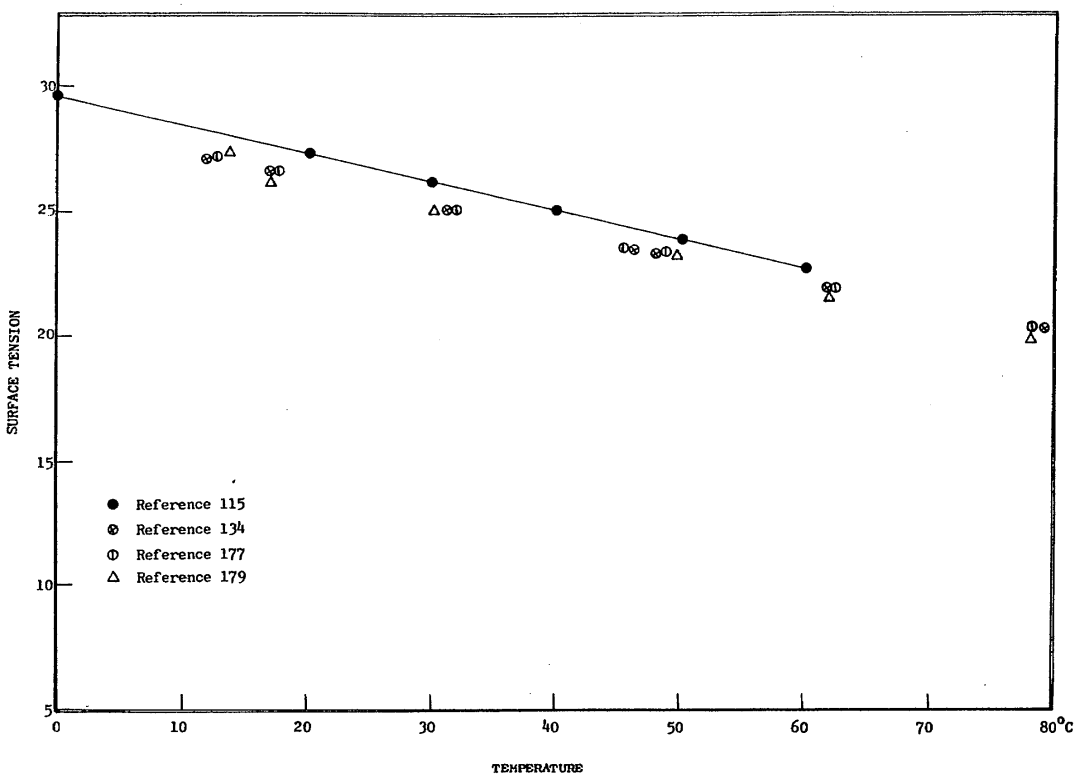


FIGURE 45. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for propionitrile (solid line passes thru recommended values).

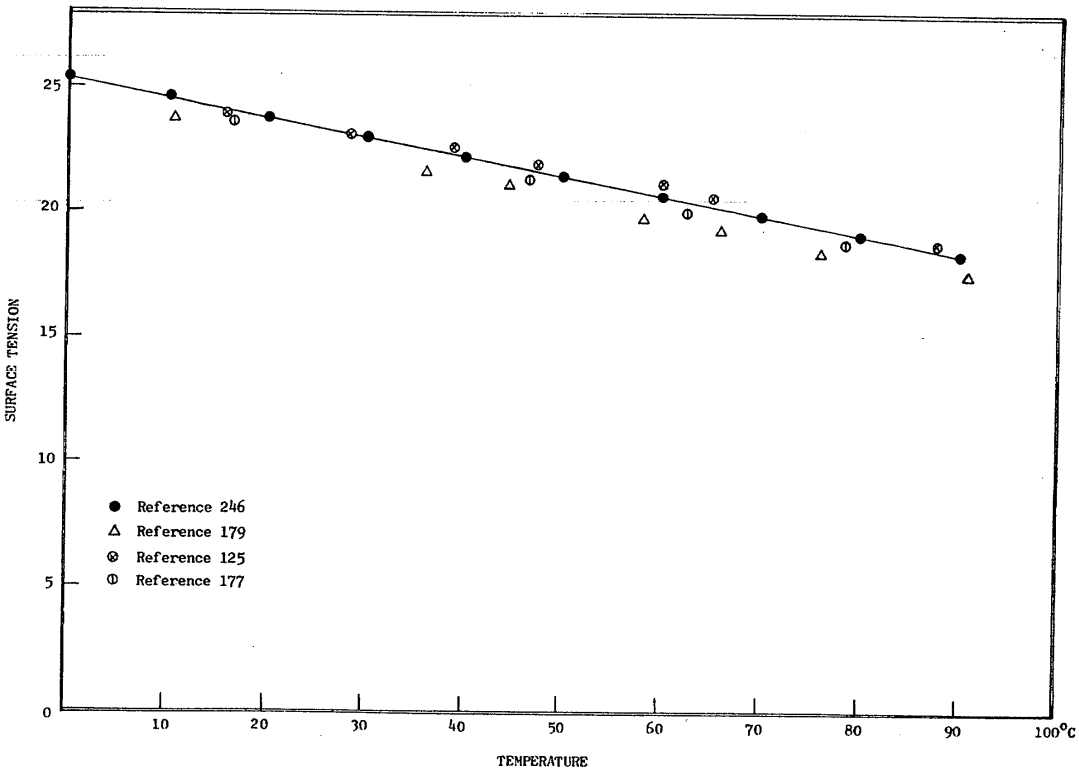


FIGURE 46. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for propyl alcohol (solid line passes thru recommended values).

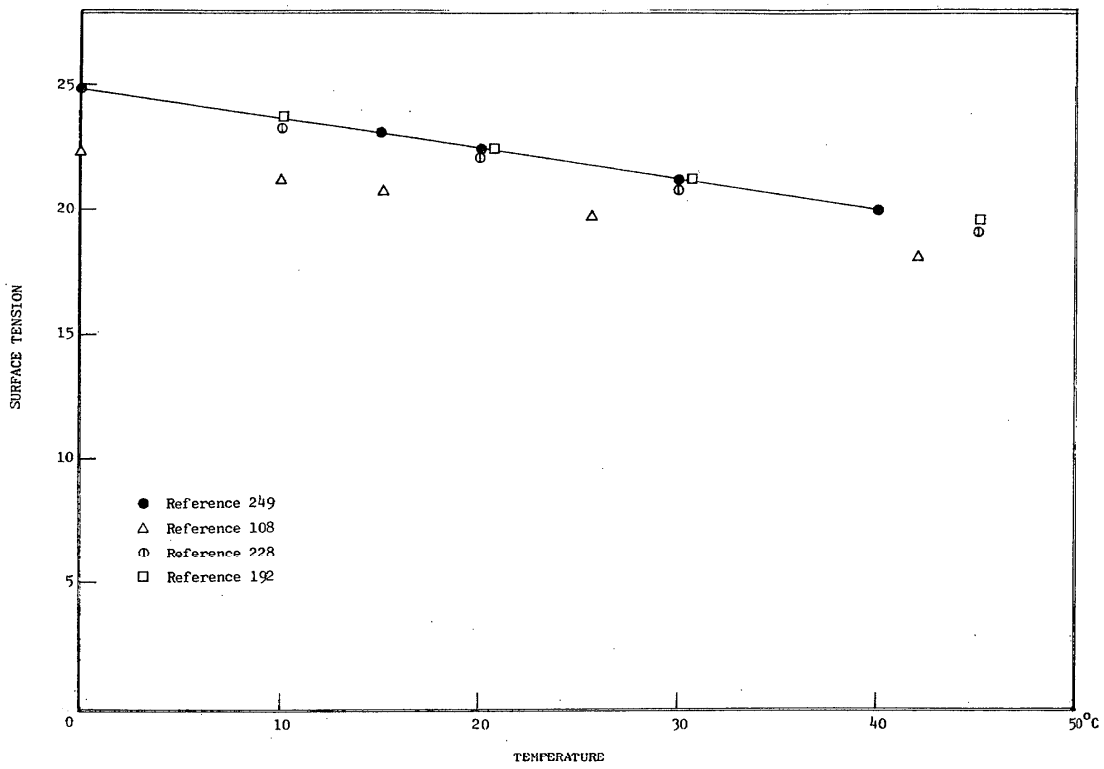


FIGURE 47. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for propylamine (solid line passes thru recommended values).

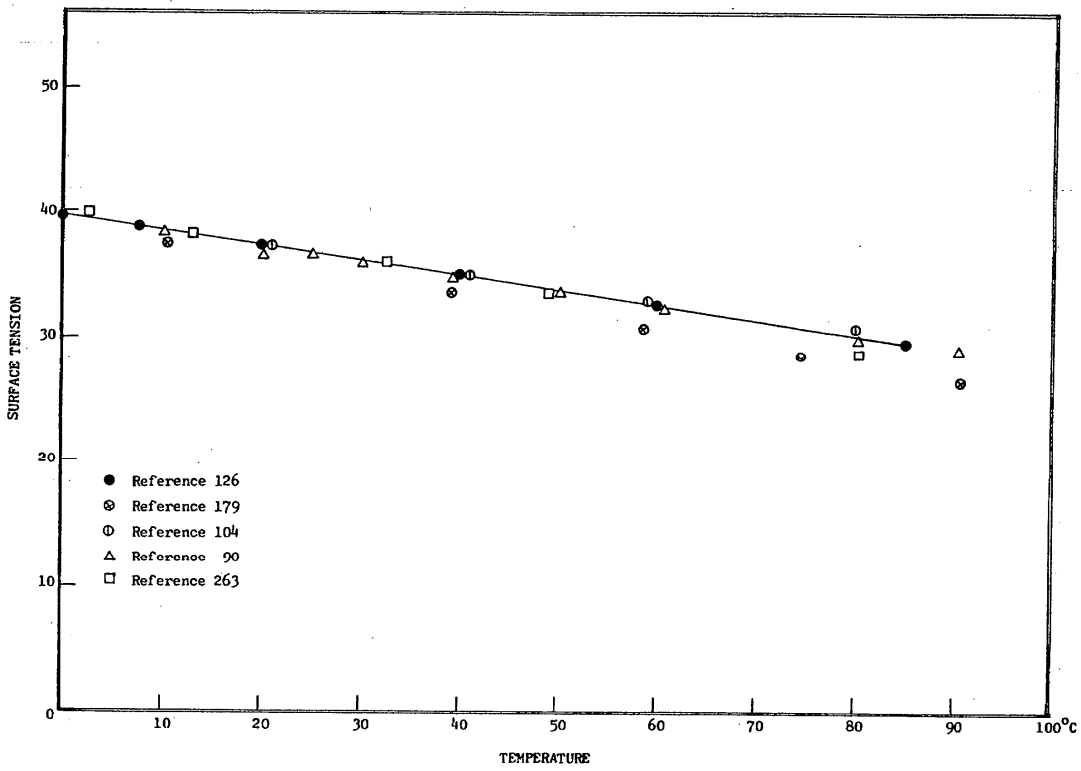


FIGURE 48. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for pyridine (solid line passes thru recommended values).

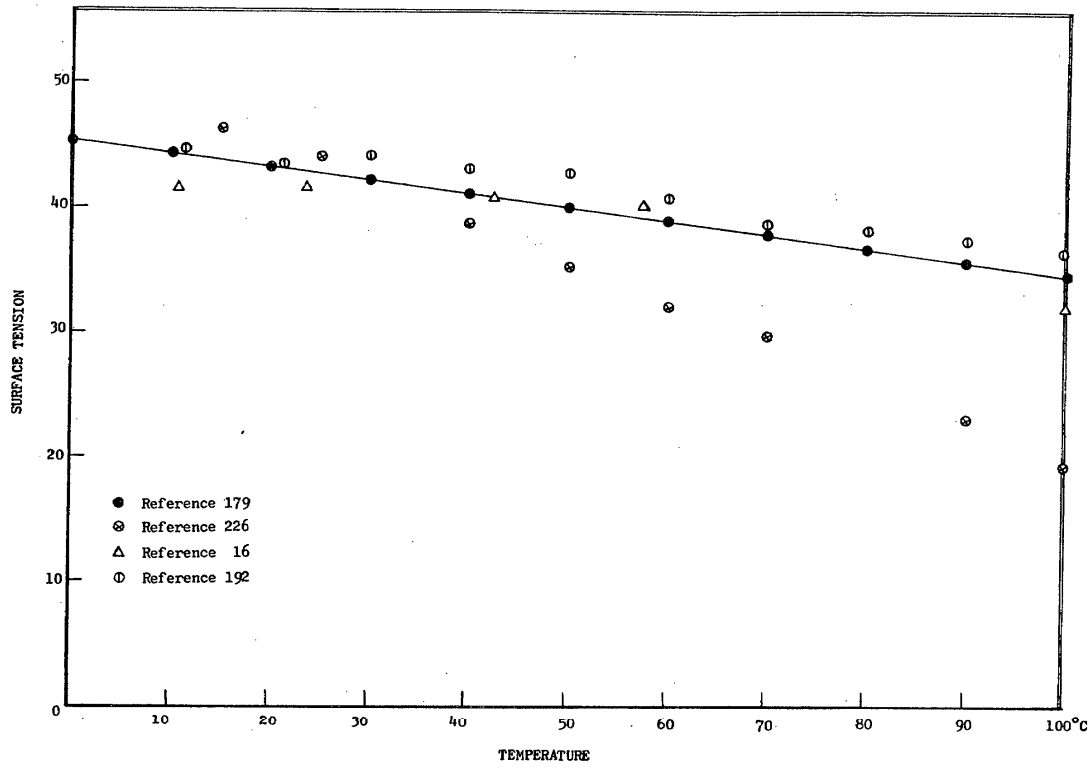


FIGURE 49. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for quinoline (solid line passes thru recommended values).

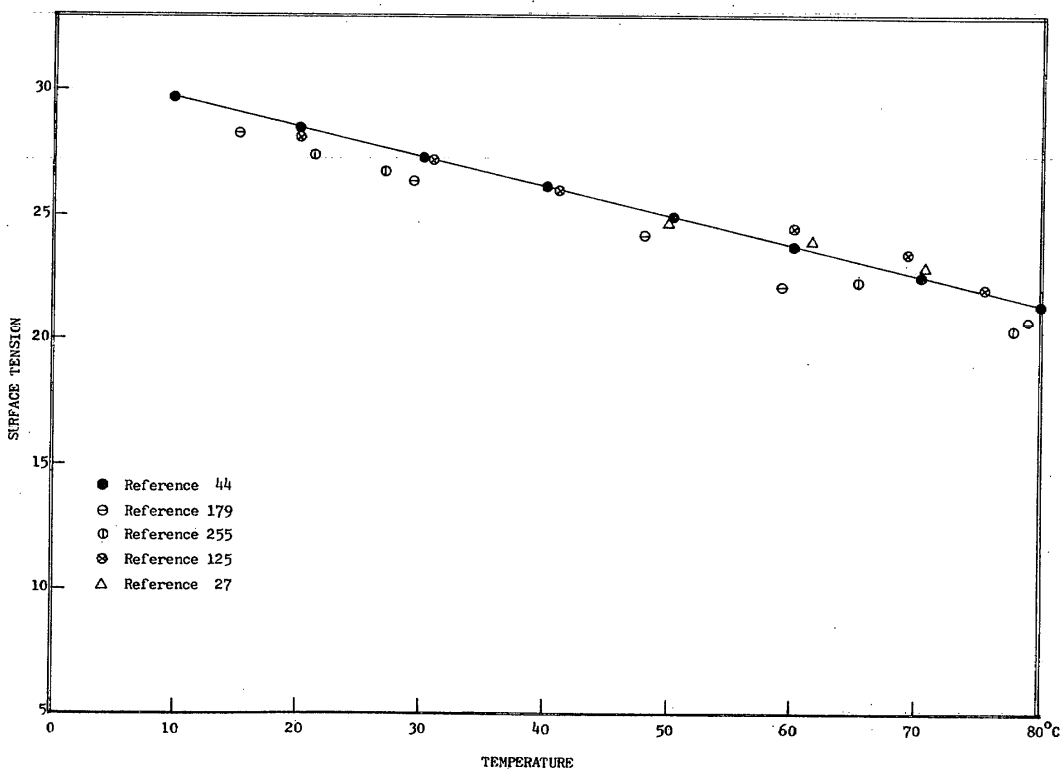


FIGURE 50. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for toluene (solid line passes thru recommended values).

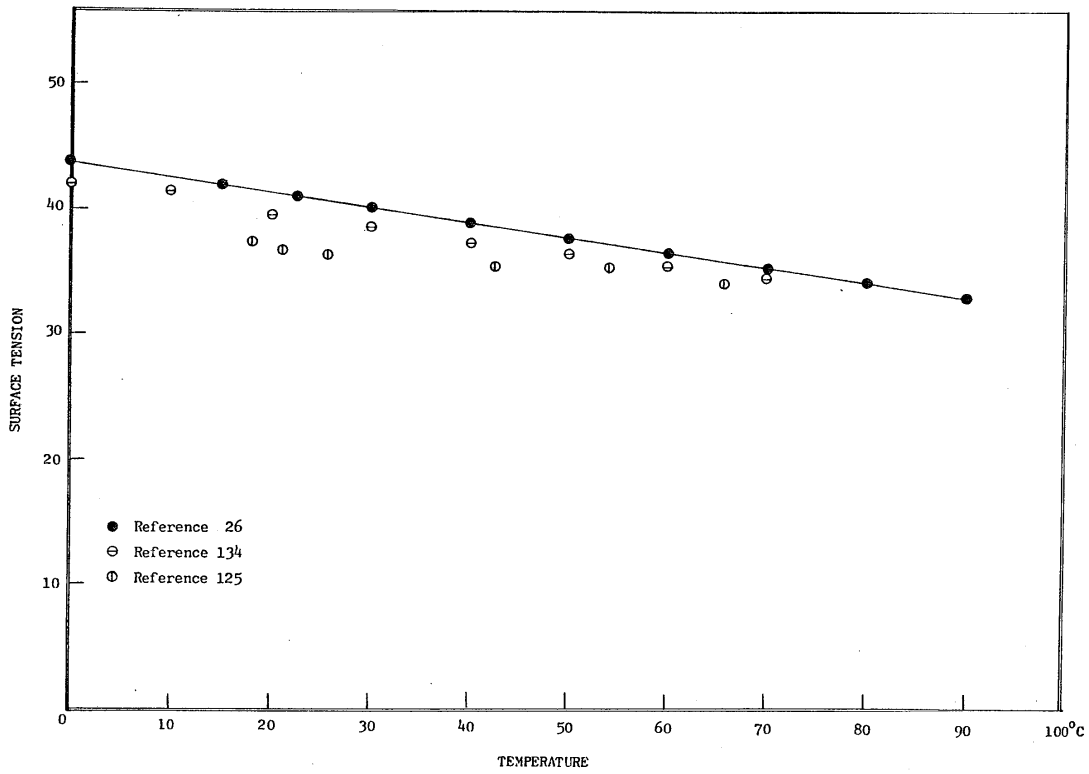


FIGURE 51. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for *o*-toluidine (solid line passes thru recommended values).

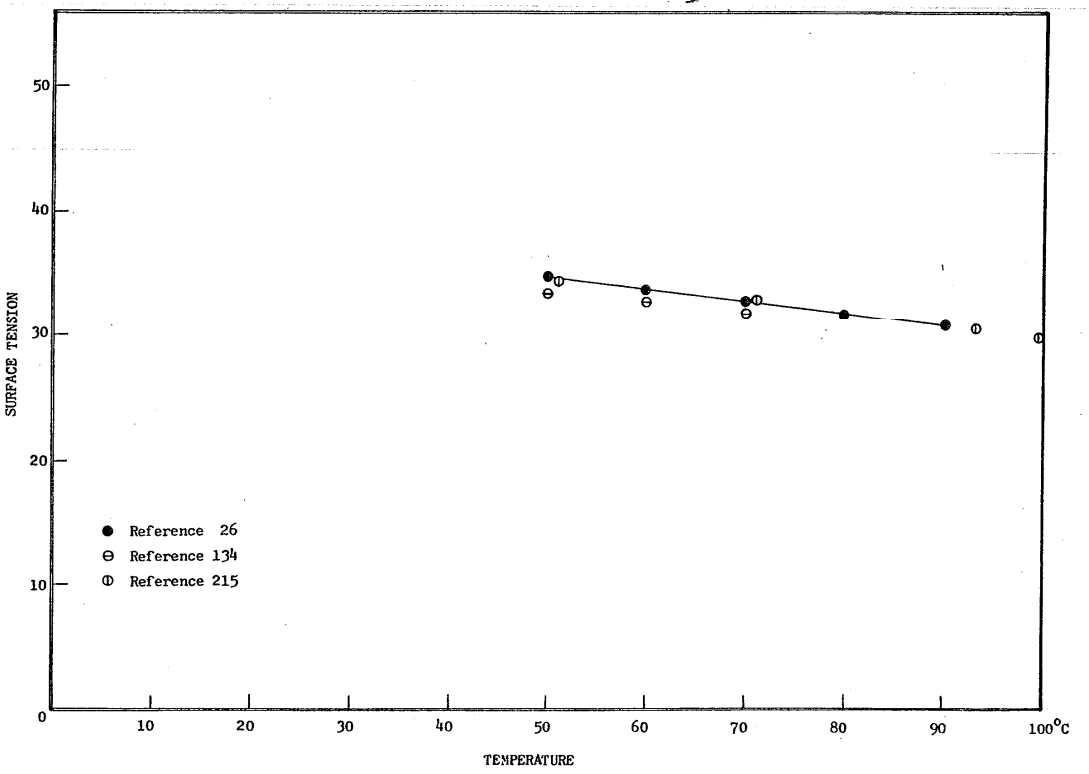


FIGURE 52. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for *p*-toluidine (solid line passes thru recommended values).

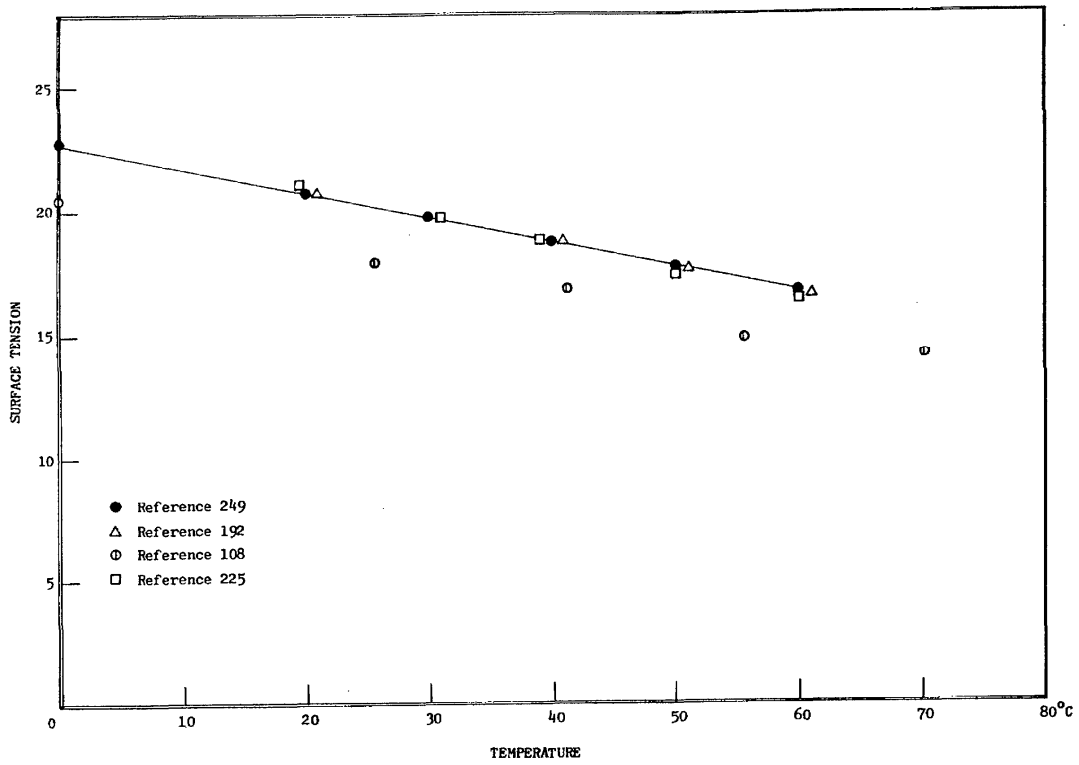


FIGURE 53. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for triethylamine (solid line passes thru recommended values).

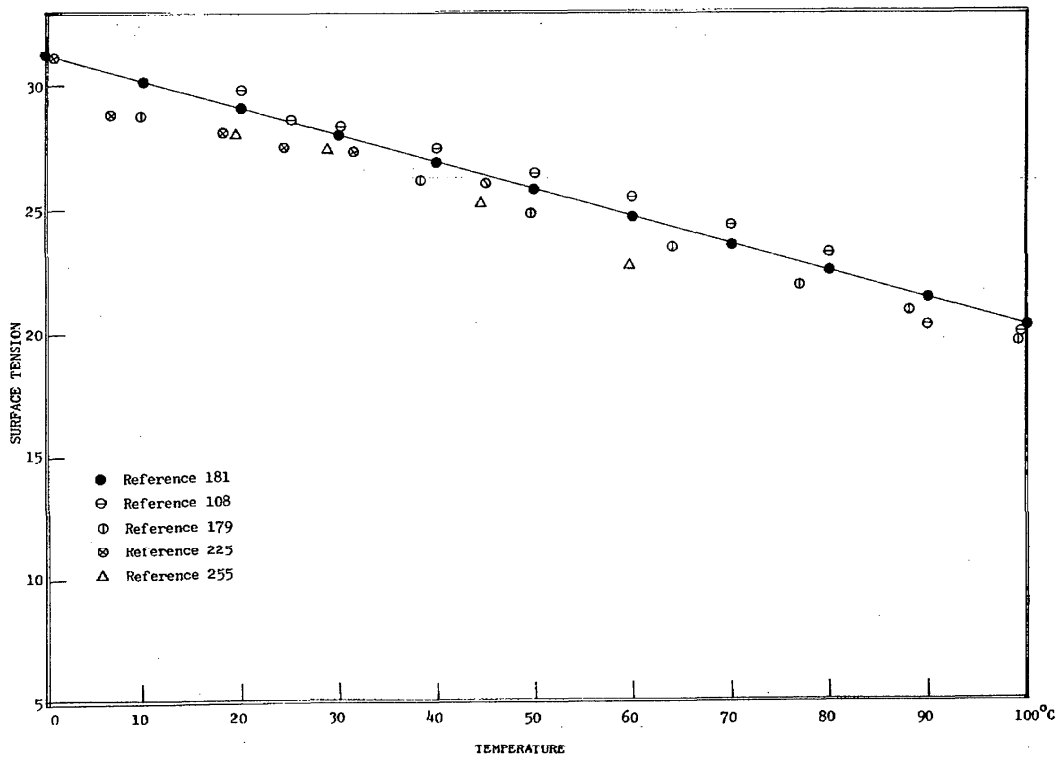


FIGURE 54. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for *m*-xylene (solid line passes thru recommended values).

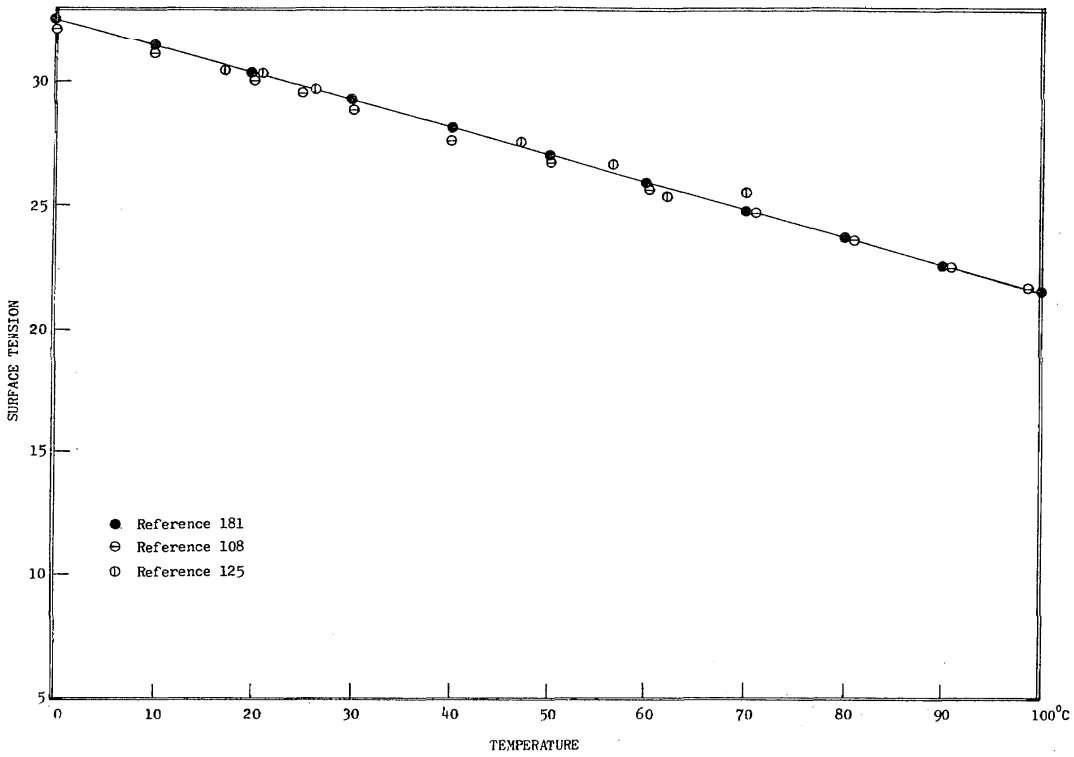


FIGURE 55. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for *o*-xylene (solid line passes thru recommended values).

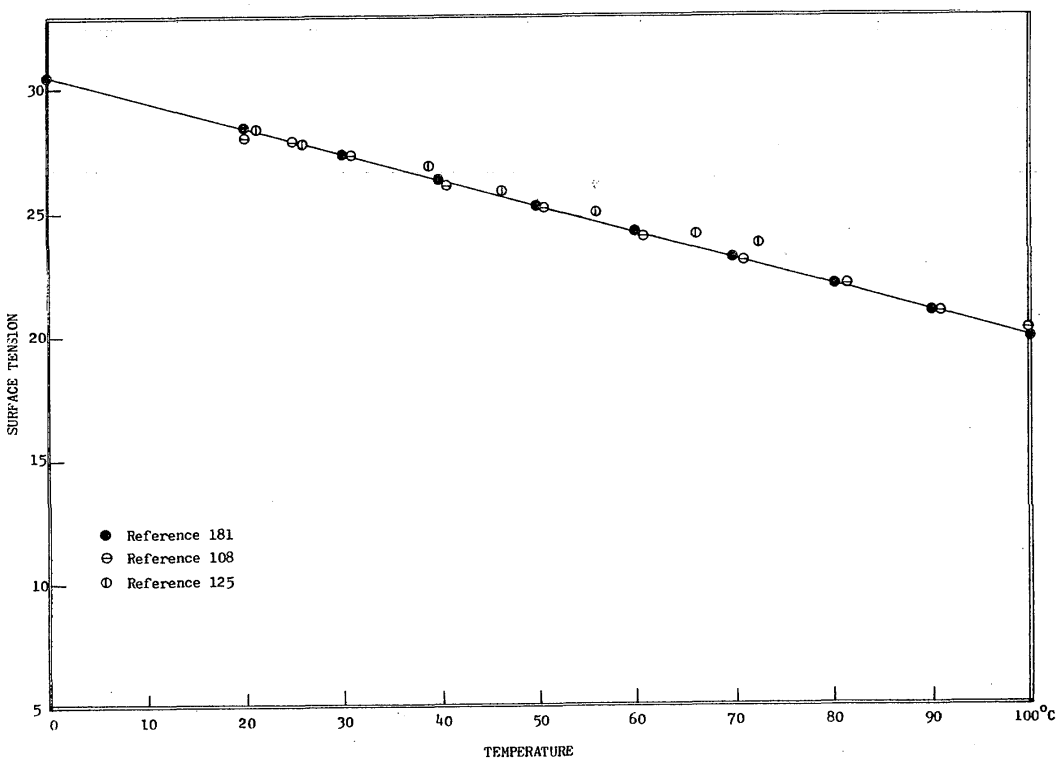


FIGURE 56. Comparison of recommended values for surface tension (in dyn/cm) as a function of temperature with selected measurements for *p*-xylene (solid line passes thru recommended values).

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6. Preface to Index of Compounds

This Index has been put together using the general principles which apply in the indexing of *Chemical Abstracts* (*CA*). The indexing system of *CA* has evolved through the years and is flexible enough to allow a certain number of exceptions established by historical usage. It is not claimed that this Index conforms precisely with current *CA* usage, but a substantial effort has been made to use names that are unambiguous and readily recognized by current workers in the field.

The principle of organization on a functional basis followed by *CA* has been used, so that "butyl acetate" is indexed as "acetic acid, butyl ester". The reader is referred to *CA* for a detailed description of the principles used. Trivial names, names from earlier systems of nomenclature which have wide acceptance, and, in some cases, alternate ways of entering the same name in the index have been included as cross references in many cases although no attempt has been made to be exhaustive.

The number of the table in which the compound can be found follows the name of the compound. A second number in italic type indicates that data on the compound are shown in the figure of that number.

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